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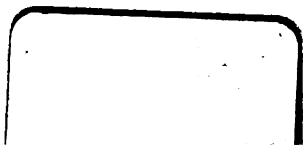
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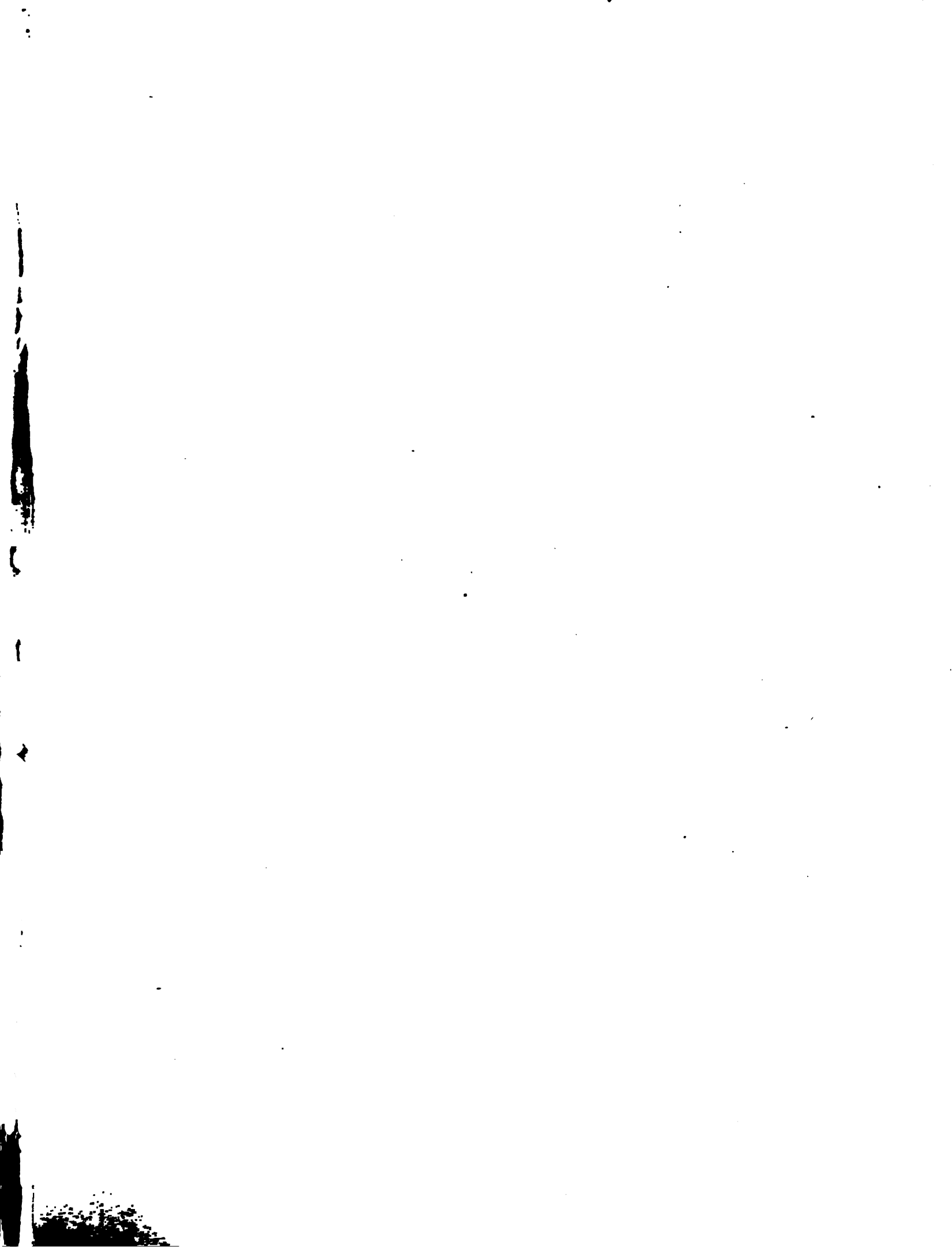
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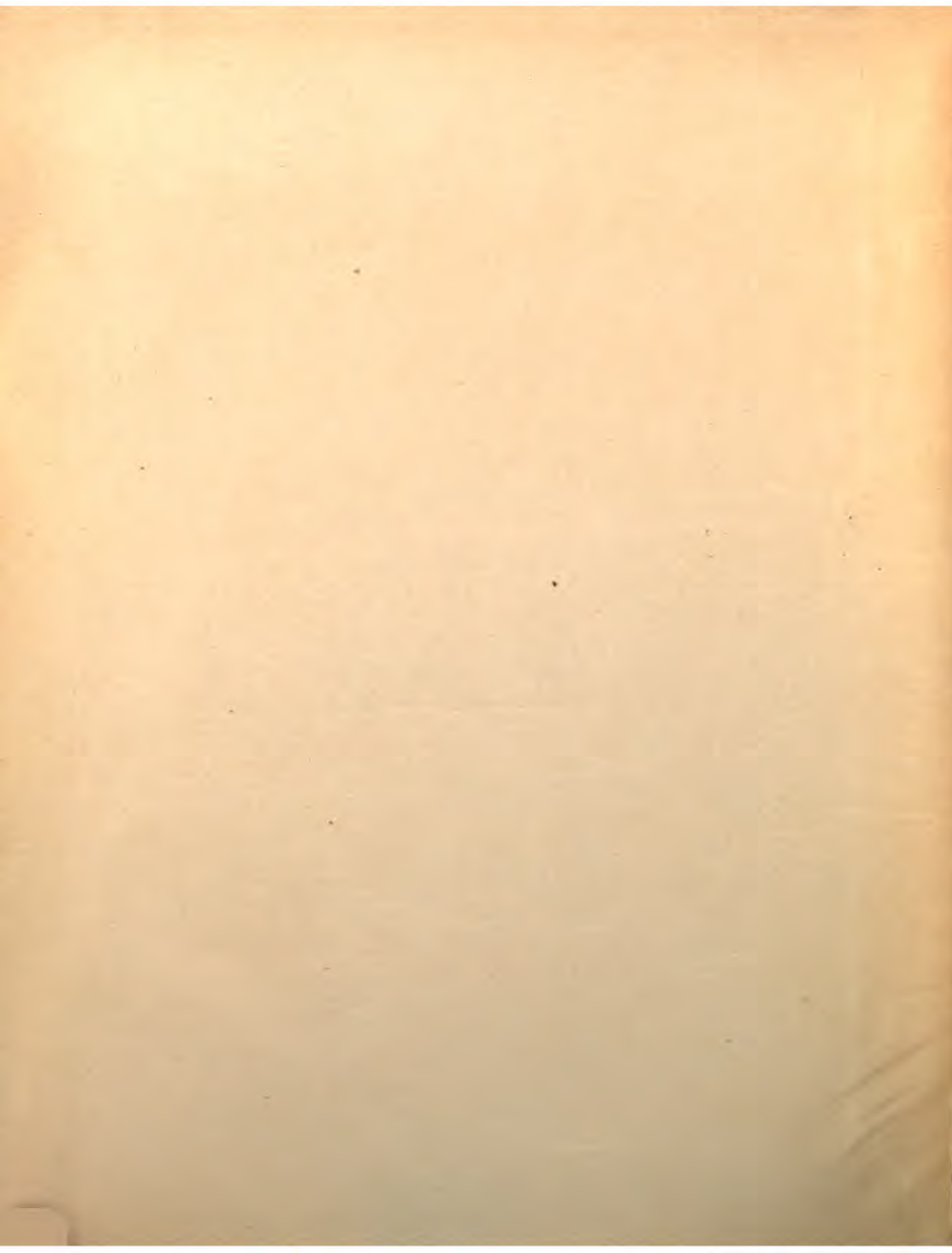
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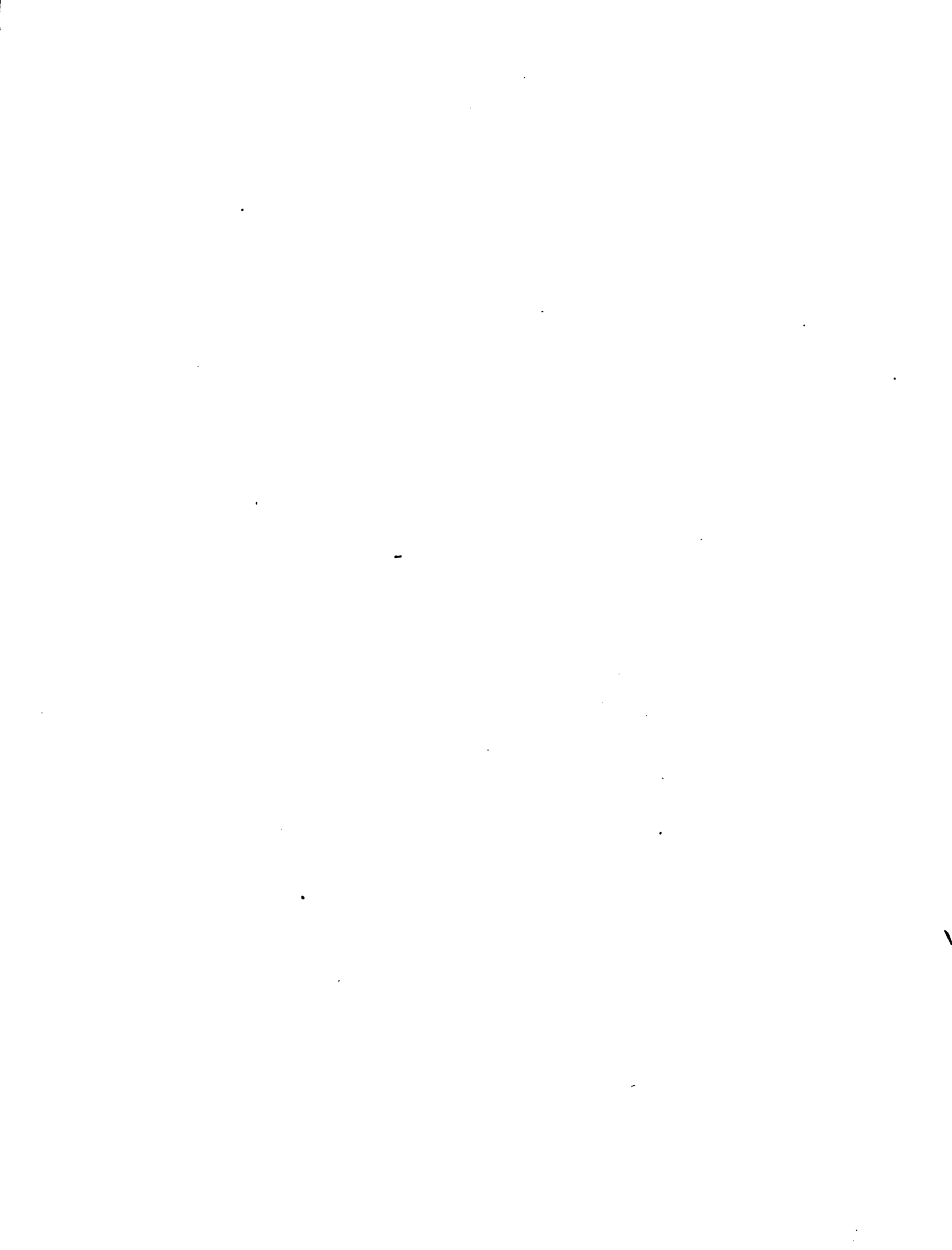
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DEPARTMENT OF COMMERCE

BUREAU OF THE CENSUS

SAM. L. ROGERS, DIRECTOR

RESIGNED APRIL 13, 1921

W. M. STEUART, DIRECTOR

APPOINTED APRIL 14, 1921

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FOURTEENTH CENSUS OF THE UNITED STATES  
TAKEN IN THE YEAR 1920

---

VOLUME XI

---

MINES AND QUARRIES  
1919

---

GENERAL REPORT AND ANALYTICAL TABLES  
AND REPORTS FOR STATES AND SELECTED INDUSTRIES

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PREPARED UNDER THE SUPERVISION OF EUGENE F. HARTLEY

CHIEF STATISTICIAN FOR MANUFACTURES

FRANK J. KATZ, SPECIAL AGENT FOR MINES AND QUARRIES



WASHINGTON  
GOVERNMENT PRINTING OFFICE

1922



## REPORTS OF THE FOURTEENTH CENSUS.

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### POPULATION:

- Volume I.—NUMBER AND DISTRIBUTION OF INHABITANTS.
- Volume II.—GENERAL REPORT AND ANALYTICAL TABLES.
- Volume III.—COMPOSITION AND CHARACTERISTICS OF THE POPULATION, BY STATES.
- Volume IV.—OCCUPATIONS.

### AGRICULTURE:

- Volume V.—GENERAL REPORT AND ANALYTICAL TABLES.
- Volume VI.—REPORTS FOR STATES, WITH STATISTICS FOR COUNTIES.
  - Part 1.—THE NORTHERN STATES.
  - Part 2.—THE SOUTHERN STATES.
  - Part 3.—THE WESTERN STATES AND THE OUTLYING POSSESSIONS.
- Volume VII.—IRRIGATION AND DRAINAGE—GENERAL REPORT AND ANALYTICAL TABLES, AND REPORTS FOR STATES, WITH STATISTICS FOR COUNTIES.

### MANUFACTURES:

- Volume VIII.—GENERAL REPORT AND ANALYTICAL TABLES.
- Volume IX.—REPORTS FOR STATES, WITH STATISTICS FOR PRINCIPAL CITIES.
- Volume X.—REPORTS FOR SELECTED INDUSTRIES.

### MINING:

- Volume XI.—MINES AND QUARRIES—GENERAL REPORT AND ANALYTICAL TABLES, AND REPORTS FOR STATES AND SELECTED INDUSTRIES.

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## ABSTRACT OF THE FOURTEENTH CENSUS.

## LETTER OF TRANSMITTAL.

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DEPARTMENT OF COMMERCE,  
BUREAU OF THE CENSUS,  
*Washington, D. C., April 3, 1922.*

**SIR:**

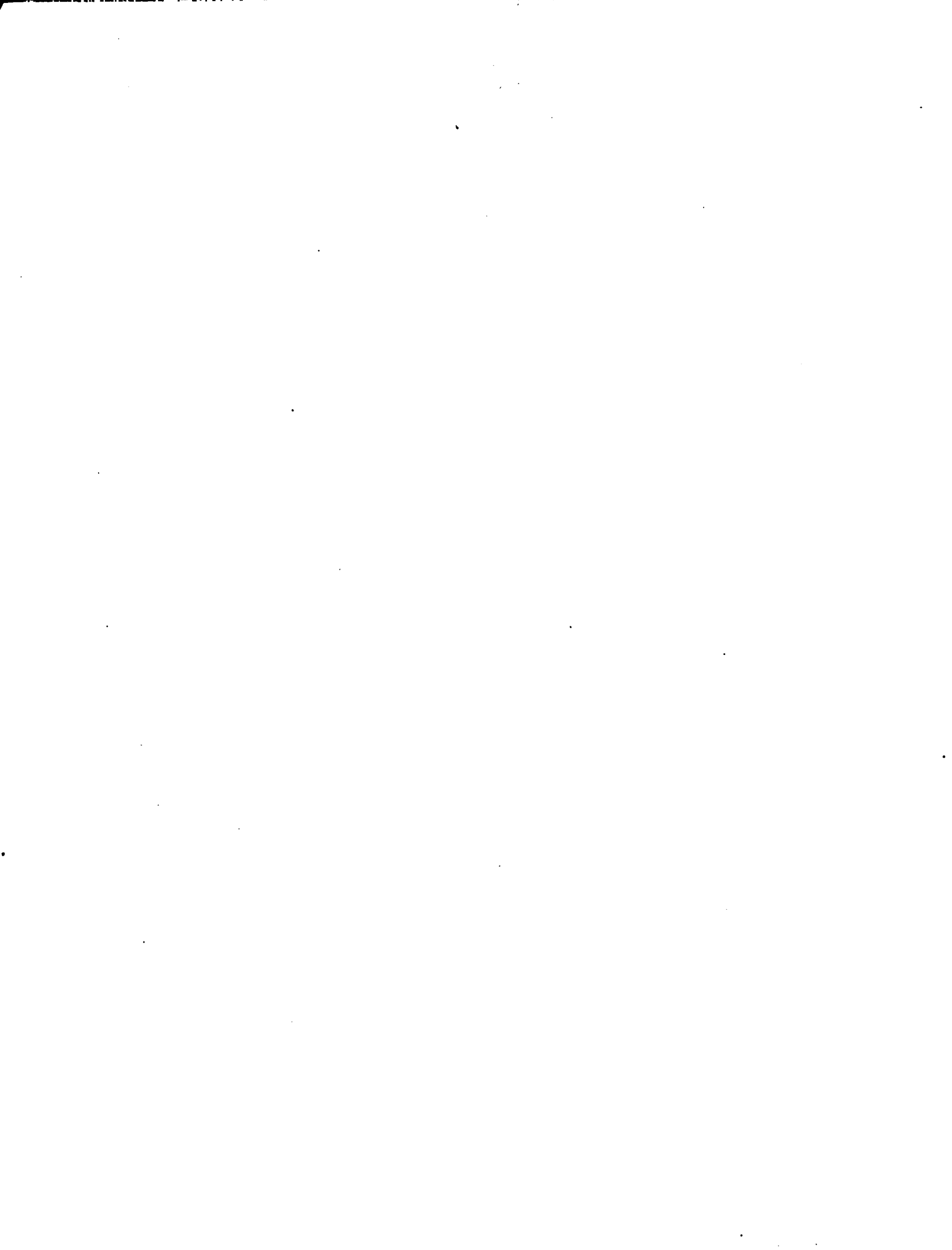
I transmit herewith Volume XI of the Reports of the Fourteenth Decennial Census, which presents statistics relating to mining industries in 1919. This volume comprises a section for the United States as a whole and sections for the several states and for selected industries. The census of mines and quarries was taken in conformity with "An act to provide for the Fourteenth and subsequent decennial censuses," approved March 3, 1919.

The collection and compilation of the statistics of mines and quarries have been conducted under the supervision of Eugene F. Hartley, chief statistician for manufactures, and the reports have been prepared by Frank J. Katz, special agent for mines and quarries, assisted by Edward B. White, chief of division, and Maude M. Harrison and Marian B. Nevius, statistical clerks.

Respectfully,

W. M. STEUART,  
*Director of the Census.*

HON. HERBERT HOOVER,  
*Secretary of Commerce.*



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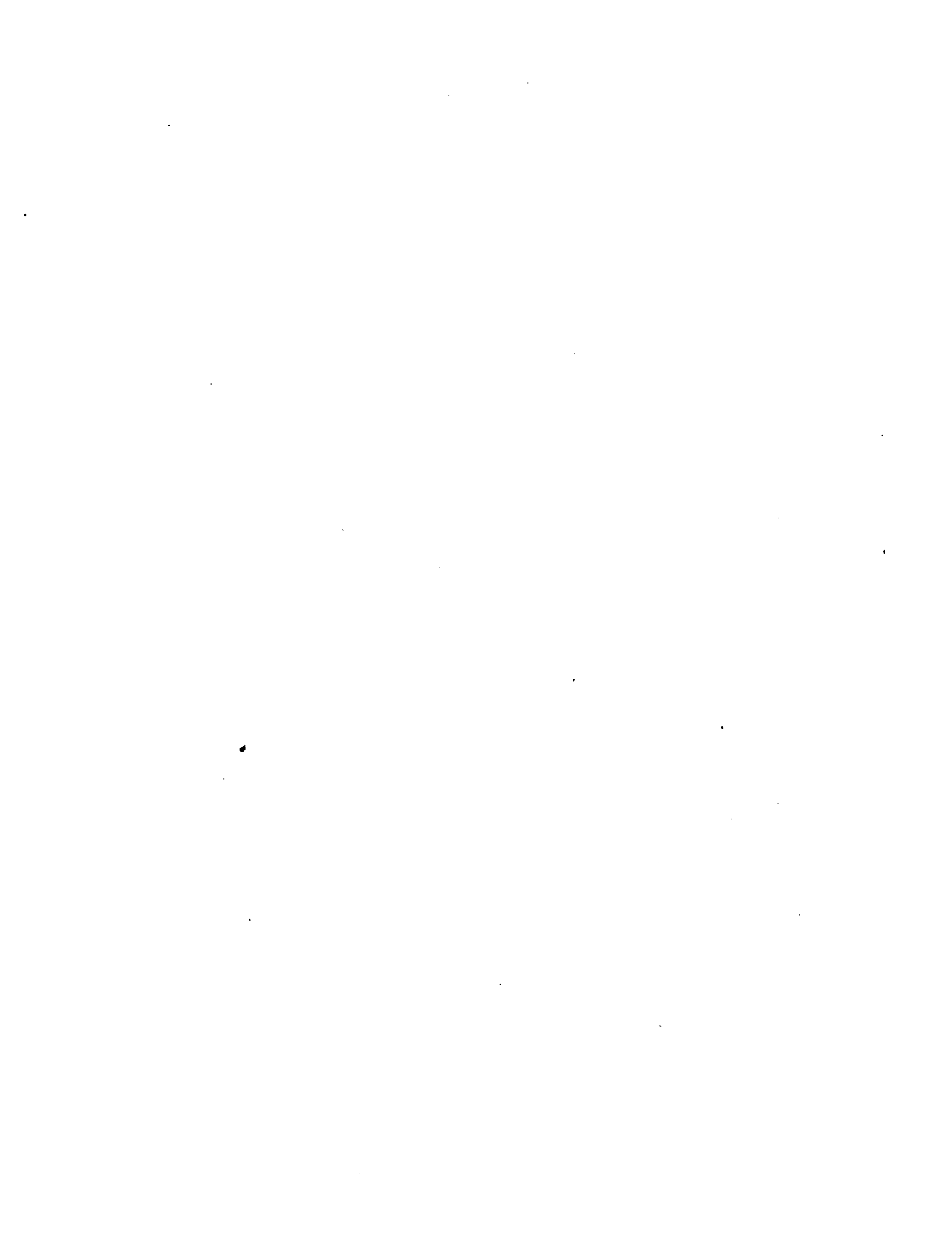
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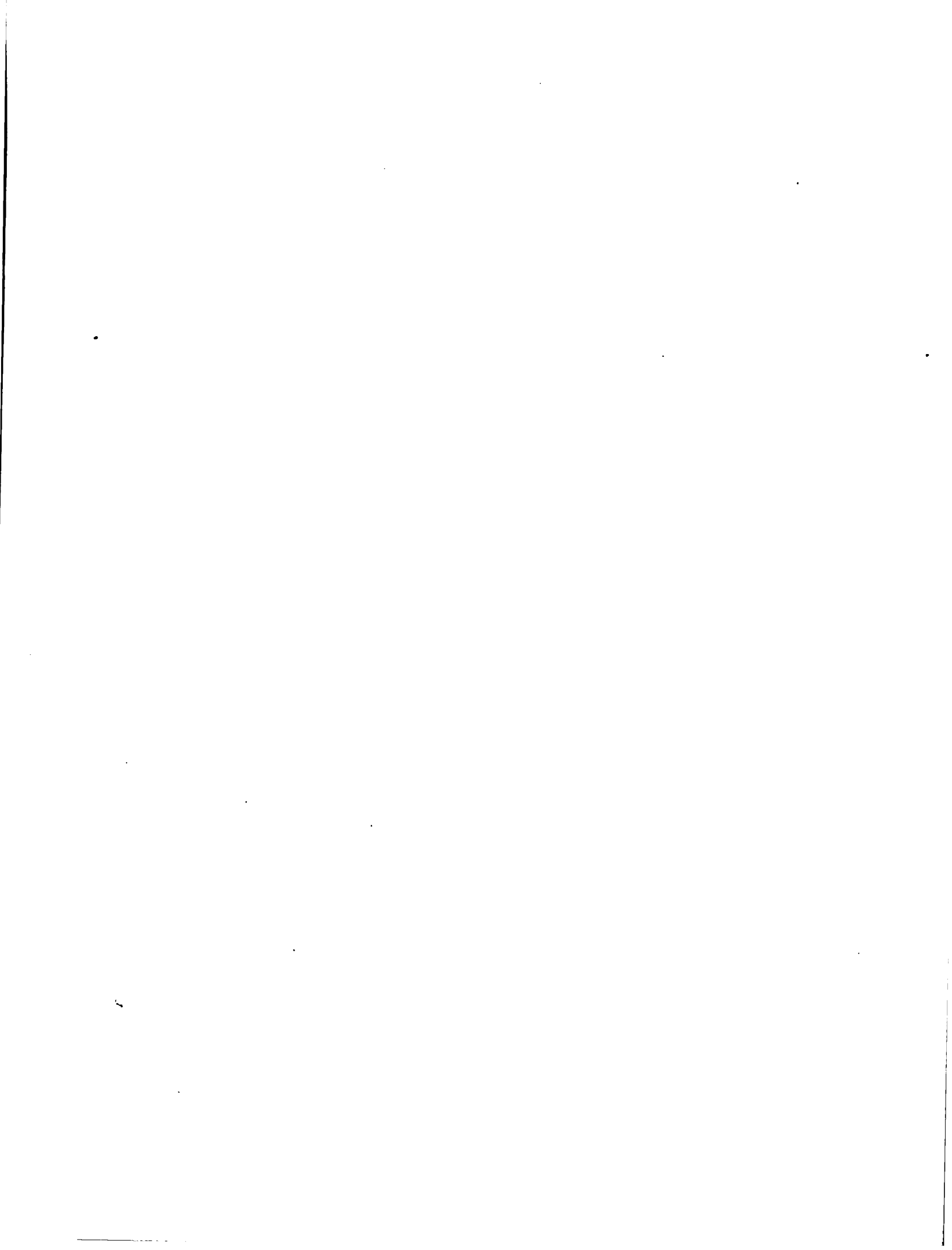
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**GENERAL REPORT AND ANALYTICAL TABLES  
AND REPORTS FOR STATES AND  
SELECTED INDUSTRIES**

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## INTRODUCTION AND GENERAL EXPLANATION.

**Scope of the report.**—The statistics for mines and quarries taken as part of the Fourteenth Decennial Census are presented in this volume. It contains (1) a general summary and analysis of the statistics; (2) general tables which bring together the principal statistics in convenient form; (3) a presentation of the principal statistics of the mining industries in the individual states; and (4) presentations of the statistics of the leading mining industries—anthracite and bituminous-coal mining, the petroleum and natural-gas industry, iron-ore mining, the mining of gold, silver, copper, lead, and zinc, stone quarrying, phosphate-rock mining, and gypsum mining.

In the summary of results for the United States the statistics of the 1919 census of mines and quarries are discussed and illustrated by tables and compared with the results of the censuses of 1909 and 1902; the geographic distribution of mining industries, the rank by value of products of states by relative position in the mining industries, and the rank by value of products of the principal mining industries in the United States and in each of the leading states are shown; the principal data on the character of organization of mining enterprises, on the scale of operations conducted by mining enterprises are analyzed; the statistics on persons engaged in the mining industries, and on the acreage of mineral land and other lands held by mining enterprises are summarized; and the data on the power used by the principal mining industries are presented. That section also includes statistics, not elsewhere presented in the volume, on mining in Alaska, Hawaii, and Porto Rico, and statistics on mining by governmental institutions in the United States.

The general tables are as follows: Table 1 compares the results of the census of 1919 with those of the census of 1909, showing for each year and for each industry the number of enterprises; number of mines, quarries, and wells; average number of wage earners employed; the aggregate horsepower used; the amount expended for salaries and wages, supplies and materials, fuel and purchased power, royalties and rents, and contract work; and value of products. It also shows the percentage of increase for all items except the number of enterprises and number of mines, quarries, and wells. Table 2 presents for each state the same statistics that are shown for the individual industries in Table 1. Table 3 presents by industries, for the United States as a whole, and for producing and nonproducing enterprises separately,

detailed statistics as to number of enterprises and mines, quarries, and wells, lands controlled, persons engaged in mining industries, capital invested, principal expenses of operation and development, value of products, and power used. Table 4 presents the same statistics by states. Table 5 shows by industries, and for producing and nonproducing enterprises separately, the number of wage earners employed on the 15th day of each month. Table 6 presents the same statistics by states. Table 7 presents by industries, and for producing and nonproducing enterprises separately, the kind and amount of fuels used. Table 8 presents the same information by states. Table 9 gives the number of enterprises in each industry by states, and shows producing and nonproducing enterprises separately.

The presentation for the individual states includes: (1) A comparison for 1919 and 1909 of the principal statistics for the producing mining enterprises for the state as a whole; (2) statistics showing the rank by value of products of the mining industries of the state, the character of organization of the mining enterprises for the state and for each industry, the size of mining enterprises by average number of wage earners for the state and for each industry, the prevailing hours of labor for the mining enterprises, and the number of wage earners employed each month; (3) the principal statistics in detail for each industry in the state that can be shown.

The presentations for each of the leading mining industries include statistics showing the progress of the industry by comparison of the results of the census of 1919 with those of previous censuses and also by comparisons based on the production statistics reported by the United States Geological Survey. They include statistical data on the geographic distribution of the industries, on land tenure, character of organization, scale of operation, persons engaged, and power used in mining enterprises. In addition, the presentation for each industry includes a general statistical table showing by states and by producing regions, in so far as possible without disclosure of individual operations, all available data in detail.

**Cooperation with the Geological Survey.**—The statistics on mines and quarries for the Fourteenth Decennial Census were collected by the Bureau of the Census in cooperation with the United States Geological Survey which collects and publishes annual statistics of mineral products.

In accordance with the cooperative agreement between the bureaus, two sets of schedules were provided for securing data on mining enterprises: (1) General schedules for all mines, quarries, and wells; (2) supplemental schedules for each of the mineral industries or classes of minerals included in the scope of the cooperative canvass. The general schedules for mines and quarries and wells followed substantially the form adopted for the census of manufactures with additional inquiries adapting that schedule to the mining industries. These additional inquiries related to the following subjects: Kind of beneficiating plant or process operated in connection with the mines; acreage of land controlled and form of tenure of mineral and other lands; technical employees; classification of wage earners by occupations; royalties paid; and the amount of expenses charged to development work.

The supplemental schedules contained inquiries in relation to quantity and value of products and data of a technical nature peculiar to each industry or class of minerals. These schedules followed substantially the forms used by the Geological Survey in its annual collection of statistics, with, however, some additions and modifications intended to bring the data in harmony with that developed by the general schedule.

Except in the case of the mineral-fuels, iron-ore, and phosphate-rock industries, for which the quantity of products was transcribed from the supplemental schedules to the general schedules, the supplemental schedules were used by the Bureau of the Census only for the purpose of classifying the general schedules according to mineral industry. The supplemental schedules were transmitted to the Geological Survey for tabulation.

**Scope of the census.**—Census statistics of mines and quarries and petroleum and natural-gas wells were compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally, the effort is made to present data throwing light upon character of ownership, size of enterprises, and similar subjects. When use is made of the statistics for these purposes, it is imperative that due attention be given to their limitations, particularly in connection with any attempt to derive from them figures purporting to show average wages, cost of production, or profits.

**Territory covered.**—The census of mines and quarries for 1919, taken in connection with the Fourteenth Decennial Census, covered the United States proper, also Alaska, Hawaii, and Porto Rico.

**Industries and enterprises canvassed.**—The Fourteenth Census covered all classes of mines, quarries,

and mineral milling or reduction works (not including smelters and refineries operated in connection with mines and quarries), and petroleum and natural-gas wells and natural-gas gasoline plants that were in operation during any portion of the year 1919. The canvass of mines, quarries, and petroleum and natural-gas wells covered both producing enterprises and those whose operations were confined to development work. Mines, quarries, or wells that were idle during the entire year 1919 were omitted from the canvass and enterprises producing less than \$500 worth of products or, in the case of bituminous-coal mines, producing less than 1,000 tons of coal were also omitted. Operations confined to development work on which expenditures amounted to less than \$5,000 during the calendar year 1919 were likewise omitted. The following operations were specifically omitted: The mining of placer gold and the hunting for precious stones by itinerant individuals and miners employing no help; prospecting; the digging or dredging of sand and gravel; the digging and preparation of peat; the digging and preparation of marls, both calcareous and greensand; the production of natural mineral waters; and mining of minor and rare minerals, unless conducted as part of an established industry producing other mineral products.

**Relation of the statistics of mines and quarries, etc., and of manufactures.**—The census of the mining industries (including the quarrying and the petroleum and natural-gas industries which are for convenience spoken of as mining industries) was taken coincidentally with the census of manufactures for 1919.

Sharp distinction between mining operations and manufacturing operations which prepare the mine product for use is impossible in the case of many plants. Mining ceases as soon as substances have been removed from the earth, and all the processes thereafter performed on those substances are in the nature of manufacturing. Such distinction can not be made strictly for all census statistics, and not at all without undue dependence on estimates. Therefore, the census of mines and quarries includes with mining those processes conducted at or near the mine by the mine operator for the purpose of preparing the crude mine product for use or for market. Such operations, designated beneficiating processes, include crushing; cleaning by washing or screening; grading and sorting by size; separation from associated worthless material; concentration; burning; calcining or roasting; grinding; and cutting and polishing. Although much of such work is theoretically in the nature of manufacture, it is not ordinarily considered as manufacture by the operators, especially when of simple character and conducted by them at the mines or quarries. For

the purposes of the Thirteenth and Fourteenth Censuses such business, as a whole, was treated as pertaining to the mining and quarrying industries.

Some of these industries are also included in the statistics of manufactures for two reasons: First, because similar processes are conducted strictly as manufacturing on purchased raw materials by concerns which do not operate mines and quarries; therefore, a complete review of manufacturing industries in these lines requires inclusion of those operations carried on by concerns that also do mining. Second, because the censuses of manufactures for 1904, 1909, and 1914 included these industries they are, therefore, included in the 1919 census for the sake of complete comparability.

The treatment of natural gas or so-called "casing-head gas" for the extraction of gasoline has been included with the statistics on mining as a part of the petroleum and natural-gas industries, for the reason that a large part of this industry has been conducted by the operators of the gas-producing wells, and in connection with their business of gas distribution. The trend in this new industry seems, however, to indicate that the gasoline-extraction business is to be more generally conducted by separate enterprises. The complete segregation of the 1919 statistics relating to the production of natural-gas gasoline as a distinct industry was not possible because many reports were consolidated with reports on well operations.

On the other hand, some mining industries have been treated as a part of manufacturing industries and have not been included in any way in the statistics of mines and quarries. This was chiefly for the reason that the manufacturing phases are predominant in these industries, and accuracy in reporting could not be secured by estimated segregation of the data for mining from those for manufacturing. There was also the further reason of preserving comparability between the censuses of manufactures for the years 1904, 1914, and 1919. This class of operations excluded from the statistics for mines and quarries includes chiefly: The mining of clay and the manufacturing of clay products at the same locality when carried on in the same establishment; the quarrying of limestone and the burning of the stone into lime carried on in the same establishment; the quarrying of limestone, shale, and cement rock, and the manufacture of these into Portland cement by the same establishment; the mining of salt or the raising of brines and their conversion into commercial salt.

The actual practice of the Bureau of the Census at the Fourteenth Census with respect to industries on the border line between mining and manufacturing has been as follows:

1. In the brick and tile, pottery, cement, and lime industries the digging of clay and the quarrying of

stone are a simple and minor part of the business in which much the greater part of the activities are of a manufacturing character. Statistics for establishments in these industries, engaged in both mining and manufacturing, are included only in the census of manufactures.

2. In the coal and coke industry complete segregation was made of all coal-mining statistics and coke-manufacturing statistics. If the operating establishment did not keep separate accounts by means of which absolute segregation of data could be obtained, an estimated segregation was made.

3. In the copper and lead and zinc industries mining statistics were completely segregated from manufacturing, i. e., smelting and refining, by estimate, as for coal and coke, if necessary.

4. On the other hand, in other industries in which establishments conducted both mining or quarrying operations and more or less elaborate manufacturing operations, segregated reports for each class of operations were secured whenever possible. When this was not possible the data for each such establishment as a whole has been included in both the census of mines and quarries and also in the census of manufactures. Industries in this category include basalt or trap rock, granite, limestone, marble, sandstone, and slate quarrying, the mining of abrasive materials, feldspar, fuller's earth, graphite, gypsum, mineral pigments, quartz or silica, talc and soapstone. In the stone-quarrying industries the establishments included in both the mining and manufacturing statistics were chiefly producers of crushed and ground stone and were classified by the census of manufactures as in the roofing and paving-material industries. There were also included, moreover, in both sets of statistics full data on a few establishments cutting and dressing stone for construction and other purposes which did not report separately for mining and for manufacturing, and for which no basis for segregation was available. In the other industries, above enumerated, the data on most of the establishments which mined and prepared their product by processes of grinding, calcining, etc., necessarily were included in both the mining and manufacturing tabulations.

The practice of the Census Bureau at the Fourteenth Census with respect to industries on the border line between mining and manufacturing differed from that at the preceding census by entirely excluding from the mines and quarries statistics data on coke making and smelting and refining, and further, in that in other border-line industries the effort was made to segregate for separate tabulations, so far as possible, the statistics relating properly to mining and to manufacturing. Thus, the amounts which have been included in the statistics for mines and quarries and for manufactures have been reduced to a minimum. Had such duplica-

tion in the coal and coke and mining and metallurgical industries alone been eliminated in the 1909 Census, the amounts included in both sets of statistics for that year would have been reduced by approximately 85 per cent—that is, from involving approximately 18 per cent to less than 2 per cent of the total value of products reported by the census of mines and quarries. As duplication in other industries has also been materially reduced in the 1919 statistics, it is evident that the remaining duplication can not amount to as much as 2 per cent of the total value of products reported by the census of mines and quarries and one-tenth of 1 per cent of the total value of products reported by the census of manufactures. For this reason no special tabulation has been made to determine the precise extent of duplication of statistics in 1919.

**The enterprise.**—As used in the text and tables the term enterprise represents one or more mines and quarries, well or groups of wells, or natural-gas gasoline plants all within the same state operated under a common ownership or unified control, or for which only one set of books of account was kept, and for which a single report was secured. It may cover plants at several localities within the same state. If plants under unified control were not all located within the same state, separate reports were secured in order that statistics for the several enterprises thus defined might be included in statistics for the states in which they were located. The enterprise is further defined as being limited to a single industry. Separate reports were secured with very few exceptions for each industry conducted by an operator, and only where combined reports on two or more industries could not be separated does a single enterprise cover more than one industry. (See below—"Classification by industries"). The number of enterprises shown in the tables is equivalent to the number of individual reports tabulated.

**Number of mines, quarries, wells, and plants.**—Under these designations is given the count of the number of mines, quarries, wells, and gasoline plants shown by the returns received. The unit of enumeration for mines and quarries was difficult to define. As a rule each group of workings at a given locality in which operations were conducted as a unit or were unified by common management or joint handling of some part of the mining process, was considered as a single mine or quarry. Many individual openings, therefore, were not counted as individual mines. The total number reported comprised those in productive operation or in the course of development during the year 1919. For petroleum and natural-gas wells the individual wells were counted and the total number productive December 31, 1919, is the number generally used in this report. The number of natural-gas gasoline plants is the total number reported in operation during the year.

**Classification by industries.**—The enterprises reported have been grouped by industries according to the kind of products. Only a few enterprises made consolidated reports covering more than one kind of product. In such cases classification was determined by the product of chief value.

**Influence of increased prices.**—In comparing figures for cost of supplies and materials, and value of products, with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase or decrease in the volume of business.

**Persons engaged in the industries.**—The following general classes of persons engaged in the mines and quarries and petroleum and natural-gas industries were distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) technical employees, (5) clerks (including other subordinate salaried employees), and (6) wage earners. In the reports for the census of 1909 the fourth class, technical employees, was not distinguished and was probably included with other salaried employees.

The number of persons engaged in each industry, segregated by occupation, sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where this date was not a representative day report for another date was requested.

The number of employees other than wage earners thus reported for the representative date has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. The average number of wage earners has been obtained in the manner explained in the next paragraph.

In addition to the more detailed report by occupation, sex, and age of the number of wage earners on the representative date, a report was obtained of the number employed on the 15th of each month, without distinction of sex or age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The average thus obtained is generally less than the number of wage earners reported for the representative day and more nearly approximates the number of wage earners that would be required to perform the work done if all were continuously employed during the year. The importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

The total number of wage earners reported for the representative day is given in the table of detailed statistics for the industries, in connection with the classification of wage earners by occupation which was made for the representative day. This number is not used in any other way because it is believed to be less significant than the average number. The number reported for the representative day, on account of the unavoidable variations of date, involves more or less duplication of persons working in different industries at different times; does not represent the total number employed in all industries at any one time; and gives undue weight to seasonal industries as compared with industries in continuous operation.

**Prevailing hours of labor.**—No attempt was made to ascertain the number of wage earners working a given number of hours per week. The inquiry called merely for the prevailing practice followed by each enterprise. Occasional variations in hours in an establishment for one part of the year to another were disregarded, and no attention was paid to the fact that a few wage earners might have hours differing from those of the majority. All the wage earners of each enterprise are therefore counted in the class within which the enterprise itself falls. In most enterprises, however, practically all the wage earners work the same number of hours, so that the figures give a substantially correct representation of the hours of labor.

**Capital.**—The instructions on the schedule for securing data relating to capital were as follows: "The answer should show the total amount of capital, owned and borrowed, invested by the operator in the enterprise on the last day of the business year reported. *Do not* include securities and loans representing investments in other enterprises." These instructions were identical with those employed at the census of 1909. The reports received in respect to capital, however, at both censuses, have in so many cases been defective that the data compiled are of value only as indicating very general conditions. While there are some enterprises maintaining accounting systems such that an accurate return for capital could be made, this is not true of the great majority, and the figures therefore do not show the actual amount of capital invested.

**Expenses.**—The expenses reported in the census of 1919 include salaries and wages; the cost of supplies, materials, and fuels, including the freight on these; cost of power purchased; the cost of contract work; royalties and rents paid; and taxes paid or assessed. The census of 1909 reported in addition to the items of expenses covered by the present census, all other items of expense incident to that year's business except interest on indebtedness, dividends, and allowances for depreciation.

**Salaries and wages.**—Under these heads are given the total payments during the year for salaries and wages, respectively. The Census Bureau has not

undertaken to calculate the average annual earnings of either salaried employees or wage earners. Such averages would possess little real value, because they would be based on the earnings of employees of both sexes, of all ages, in different occupations, and of widely varying degrees of skill. Furthermore, so far as wage earners are concerned, it would be impossible to calculate accurately even so simple an average as this, since the number of wage earners fluctuates rapidly and irregularly in every industry, and in some to a very great extent from day to day. The Census Bureau figures for wage earners, as already explained, are averages based on the number employed on the 15th day of each month and, although representing the number, according to the pay rolls, to whom wages were paid on that date, no doubt represent a larger number than would be required to perform the work in any industry if all were continuously employed during the year.

**Supplies and materials, fuel, and power.**—Statistics as to supplies and materials, fuel, and power relate to the cost of these used during the year, which may be more or less than the amount purchased during the year. The term "supplies and materials" covers mine, mill, quarry, and well supplies, and mineral or natural gas purchased for treatment, resale, or distribution.

**Contract work.**—The amounts reported under this head include expenditures for both productive operations and those prosecuted for development only; they are in effect indirect expenditures for salaries, wages, supplies and materials, fuel, and power.

**Royalties and rents.**—The amounts given under this head represent the payment to fee holders, or the value of share of product credited to fee holders, for mineral output from leased land, and also rents paid for plants, equipment, and privileges or easements.

**Taxes.**—The taxes include all Federal, state, county, and local taxes. The data compiled with respect to Federal taxes are very defective, largely for the reason that many mining corporations are engaged in other business and have sources of income other than from mining and do not pay capital stock, income, and excess-profits taxes on mining separately. For many of these corporations no data have been obtained; for others satisfactory segregation of mining could not be made.

**Expenditures for development work.**—The expenses reported, as defined above, include costs of both productive operation and development work. That part of the expenses for salaries, wages, contract work, supplies and materials, fuel, and power which was credited by the mine operators to development is shown as expenditures for development work. In the statistics on producing enterprises the part of expenses ascribed to development is relatively small, but in the statistics for nonproducing enterprises it is a large part of the total of all expenses reported.

**Value of products.**—The amounts given under this heading represent the selling value at point of production, or f. o. b. at point of shipment, or such other value as may represent the net value or amount received for the 1919 product under the terms by which it was disposed of, and also includes the value at point of production of products used by the operating company.

The total value of products reported includes, in addition to the value of the principal mineral produced as indicated by the industry designation, also the value of other mineral or other products, and amounts received for power sold or work or miscellaneous services for other enterprises. It is to be noted, particularly with respect to the industries producing metaliferous ores, that amounts received by the producers, i. e., the value of products as reported by the census, stand in no readily discernible relation to quantity and market value of products recoverable from the materials mined. The census figures on the value of products for the copper-mining industry, for example must not be taken as value of copper produced, but only as the value at the mine of ores, concentrates, etc.

**Quantity of products.**—Statistics on quantities of mineral products are presented only in the special reports on the several mining industries. They are for the most part, and except as explained in those special reports, the statistics which have been tabulated by the United States Geological Survey. More detailed and elaborate statistics on quantities of all mineral products will be found in the reports of the United States Geological Survey.

**Differences between products reported by the Bureau of the Census and the Geological Survey.**—The statistics showing the quantities and values of mineral products were obtained by the Bureau of the Census in cooperation with the Geological Survey, but the two bureaus followed different methods in compiling and presenting these statistics. Between these methods there is—first, the fundamental difference that the Bureau of the Census endeavors to present the total actual output and its value to the producer for the calendar year, whereas the Geological Survey reports “marketed production,” sales, or shipments, including the amount used by the producers; the two sets of statistics may therefore be quite different; and second, the Geological Survey shows separately the quantity and value of each mineral product, whereas the Bureau of the Census presents the value of products of each mining industry or group of mining enterprises, classified for purposes of tabulation as an industry. Thus the Bureau of the Census figures for an industry include the value of some products not indicated by the industry designation, whereas the Geological Survey tabulates the value of each product under its proper designation, irrespective of its source.

For example, the crude or mine products of a metaliferous-lode-mining enterprise include varying combinations of the metals gold, silver, copper, lead, and zinc, and sometimes other metals. The Bureau of the Census classifies each of such enterprises according to the metal of predominant worth in ores produced, and tabulates the amount received by the producer for ore and concentrates, etc., as the total value of products in the industry classification to which the particular enterprise is assigned. The Geological Survey, on the other hand, presents separately the quantity and value of the several metals recoverable from ores, etc. Therefore the statistics compiled by the two bureaus for the gold, silver, copper, lead, and zinc-mining industries are not comparable. Similar differences in presenting results apply also to the rare-metals-mining industry. Again, the total value of all products of the mica mines is not identical with the value of the output of mica, but, as reported by the Bureau of the Census, includes the value of some feldspar or other products mined in connection with the principal product.

Another cause contributing to the difference in the reports of the two bureaus is the fact that in nearly all industries some enterprises report raw or crude mine or quarry products, and other enterprises in the same industry report milled, dressed or otherwise beneficiated products. Except where a distinct and separate report on the finishing operations was obtained for inclusion in the tabulations by the census of manufactures all operations involving milling, dressing, or other beneficiation were included in the tabulation of the census of mines and quarries, as explained in the paragraphs on the relation between statistics of mines and quarries and of manufactures. The Geological Survey did not in all cases follow the same rules, sometimes reporting only raw products where the Bureau of the Census reported finished products, or vice versa. Thus, the Geological Survey reports value of gypsum in all finished gypsum products, whereas the Bureau of the Census reports value of gypsum rock and the value of only such gypsum products as were reported in a schedule inseparably combining mining and milling operations. On the other hand, the Geological Survey reports only the value of crude magnesite produced, whereas the census of mines and quarries tabulates the value of both crude and calcined magnesite as reported by the producers.

Another difference of considerable moment in the minor industries, but affecting also all industries, is that the Geological Survey included in its tabulations products reported by establishments not included in the census tabulations. These were of four kinds: Governmental, penal, and eleemosynary institutions which are omitted from the general tables presented

by the census of mines and quarries; small enterprises not within the scope of the census; nonproducing enterprises which marketed or used previously mined product; and enterprises from which the Bureau of the Census was unable to obtain financial and other data called for by its schedule, or could secure only a defective report which was not tabulated, whereas the Geological Survey was able to obtain the desired information on product.

In addition to the foregoing general differences in method, there are differences peculiar to certain industries. Thus, in the natural-gas industry the Bureau of the Census used only reports of producing or well-operating companies, whereas the Geological Survey made use of and to some extent included in its statis-

tics the reports of distributing companies which purchased their natural gas from producing companies. In the sandstone industry the Bureau of the Census includes enterprises which crushed the stone to sand at the quarries, while the Geological Survey includes this production under sand and gravel only. Other special differences which were significantly large for 1919 are explained in footnotes appended to the following table. This table shows the value of products as given in the general tables of this report, and as published by the Geological Survey in its report "Mineral Resources of the United States, 1919." The differences existing between the two reports are shown by amount and by the per cent these amounts are of the total reported by the Geological Survey.

TABLE SHOWING DIFFERENCES IN VALUE OF PRODUCTS AS REPORTED BY THE BUREAU OF THE CENSUS IN "MINES AND QUARRIES, 1919," AND BY THE GEOLOGICAL SURVEY IN "MINERAL RESOURCES OF THE UNITED STATES, 1919."

INDUSTRY.	Report of Bureau of the Census.	Report of Geological Survey.	DIFFERENCE. <sup>1</sup>		INDUSTRY.	Report of Bureau of the Census.	Report of Geological Survey.	DIFFERENCE. <sup>1</sup>	
			Amount.	Per cent.				Amount.	Per cent.
<b>FUELS:</b>					<b>MISCELLANEOUS:</b>				
Coal, anthracite.....	\$364,064,142	\$364,926,950	-\$862,808	-0.2	Abrasive materials.....	\$721,728	\$1,484,915	-\$763,187	-51.4
Coal, bituminous.....	1,145,977,565	1,160,616,013	-14,638,448	-1.3	Asbestos.....	249,889	251,265	-1,426	-0.6
Petroleum and natural gas.....	\$ 81,793,423	\$ 956,961,068	-25,167,640	-2.6	Asphalt.....	749,620	682,989	+66,531	+9.7
<b>METALLIFEROUS ORES:</b>					Barytes.....	1,592,245	\$ 1,727,822	-135,577	-7.8
Iron.....	218,217,906	\$ 197,296,282	+20,921,623	+10.6	Bauxite.....	2,190,279	2,201,747	-11,468	-0.5
Copper.....	( )	( )			Chromite.....	105,841	129,302	-23,461	-18.1
Gold and silver, lode mines.....	( )	( )			Clay.....	10,086,298	\$ 7,090,681	+2,995,617	+42.2
Gold, placer mines.....	( )	( )			Feldspar.....	584,296	585,200	-904	-0.2
Lead and zinc.....	( )	( )			Fluorspar.....	3,334,880	3,525,374	-190,494	-5.4
Manganese.....	2,188,312	\$ 3,349,355	-1,161,043	-54.7	Fuller's earth.....	2,019,226	1,998,329	+20,897	+1.0
Quicksilver.....	1,803,484	1,933,560	-130,076	-6.7	Graphite.....	869,408	15,778,857	+15,009,449	+17.1
Rare metals.....	( )	( )			Gypsum.....	6,805,140	15,727,907	+8,922,767	+58.7
<b>STONE:</b>					Magnesite.....	2,169,571	\$ 1,248,415	+921,156	+73.8
Basalt.....	9,657,977	8,944,686	+713,291	+8.0	Mica.....	607,025	541,651	+65,374	+12.1
Granite.....	19,279,345	19,345,714	-1,066,369	-5.5	Millstones.....	64,081	66,372	-2,291	-3.5
Limestone.....	62,943,924	63,171,701	-227,777	-0.4	Mineral pigments.....	480,768	( )		
Marble.....	4,397,912	\$ 8,042,297	-3,644,385	-45.3	Phosphate rock.....	10,300,196	11,591,268	-1,291,070	-11.1
Sandstone.....	10,684,969	\$ 5,283,842	+5,401,127	+102.2	Pyrite.....	2,408,648	2,558,172	-149,524	-5.8
Slate.....	5,720,792	6,030,648	-309,856	-5.1	Silica.....	371,638	373,571	-1,933	-0.5
					Sulphur.....	17,935,882	10,252,000	+7,683,882	+75.0
					Talc and soapstone.....	2,302,938	2,352,078	-50,232	-2.1

<sup>1</sup> The plus (+) or minus (-) signs indicate the amounts by which the Bureau of the Census figures exceed or fall below those published by the Geological Survey.  
<sup>2</sup> Includes natural-gas gasoline. Difference due to different bases of tabulation.  
<sup>3</sup> Differences partly due to different classifications of ores as manganiferous iron ores and iron ores.  
<sup>4</sup> Comparable statistics not available as the Bureau of the Census reports net value to producers of mine products, and the Geological Survey reports the gross value of metals in ores produced.  
<sup>5</sup> Includes value of dressed and finished products for which the Bureau of the Census reports only the value of rough stone.  
<sup>6</sup> Not including value (approximately \$6,000,000) of sandstone classified as such by the Bureau of the Census, but crushed and ground by the producers and therefore classified as sand by the Geological Survey.  
<sup>7</sup> Total value of abrasive materials as reported by the Geological Survey is \$2,887,902 from which has been deducted the value of millstones separately reported by the census of mines and quarries, and the value of grindstones and pulpstones reported by the census of manufactures; the balance—\$1,484,915—includes the value of a relatively large amount of other material not included by the census of mines and quarries with abrasive materials.  
<sup>8</sup> Includes, in addition to amounts reported by producers, data from other sources covering output by small producers not canvassed.  
<sup>9</sup> Only raw clay sold as such and does not include production by clay-products manufacturers who made separate reports to the census of mines and quarries.  
<sup>10</sup> Includes value of manufactured products which are not included in the value reported by the census of mines and quarries.  
<sup>11</sup> Based on valuation of crude magnesite, whereas the census of mines and quarries includes the value of crude and calcined products as reported by the producer.  
<sup>12</sup> Not reported.  
<sup>13</sup> Marketed production without regard to large output held in stocks.

**Cost of mining and profits.**—The census data do not show the entire cost of mining and well operations, and consequently can not be used for the calculation of profits. No account has been taken of depreciation or interest; rent of offices and buildings other than those connected with mine and quarry operation; insurance, selling and other sundry expenses.

**Lands controlled.**—The inquiry on land tenure was confined to land pertaining to the mining or well opera-

tions covered by the report. In many of these, however, land held in reserve for future development and for speculative or other purposes not pertaining to mining was included in the returns, and also a large number of more or less unsatisfactory estimates were included. Nevertheless, it is believed that the data presented reflect fairly the conditions as to land tenure in the mining industries, and correctly show the order of magnitude of land holdings pertaining to mining enterprises.



**Power used.**—The item, aggregate horsepower, represents the horsepower of prime movers used by the enterprises for generating power plus the horsepower of motors, principally electric, and of other equipment operated by power purchased from other concerns. It does not cover the power of electric motors taking their current from generators operated by prime movers reported by the same enterprise (such equipment is reported separately), because its inclusion would obviously result in duplication. The figures on power represent the rated capacity of the engines,

motors, etc., and not the amount of power in actual daily use.

**Fuel.**—Statistics of the quantity of fuel used are shown only for anthracite and bituminous coal, coke, wood, fuel and other heavy oils, gasoline or other volatile oils, and natural gas. They relate to the quantity used during the year, which may be more or less than the quantity purchased. As only the principal varieties of fuel are shown, no comparison can be made with the total cost of all fuel.

# SUMMARY OF RESULTS FOR THE UNITED STATES.

## PRINCIPAL STATISTICS.

**Summary for continental United States and outlying possessions: 1919.**—Table 1 presents the results of the Fourteenth Census which relate to the mining industries in 1919 and shows the principal statistics for all mines and quarries and petroleum and natural-gas

wells within the area of enumeration. This area included, in addition to continental United States, the outlying territories of Alaska, Hawaii, and Porto Rico. The figures here given include nonproducing as well as producing mines, quarries, and petroleum and natural-gas enterprises, and constitute the most general summary of results of the canvass.

TABLE 1.—SUMMARY OF PRINCIPAL STATISTICS: 1919.

	Total.	Continental United States.	Alaska.	Hawaii.	Porto Rico.
Number of enterprises.....	22,361	21,907	346	5	13
Number of mines and quarries.....	14,802	14,417	367	5	13
Number of petroleum and natural-gas wells.....	257,631	257,673	8		
Number of natural-gas gasoline plants.....	1,115	1,115			
Persons engaged.....	1,088,444	1,064,796	3,267	155	226
Proprietors and firm members, total.....	22,769	22,155	593	4	17
Number performing manual labor.....	5,783	5,272	506		6
Salaried employees.....	75,688	75,467	199	6	28
Wage earners (average number).....	996,967	967,184	2,475	145	138
Wage earners Dec. 15, or nearest representative day.....	1,100,186	1,066,458	13,379	140	209
Above ground.....	386,523	386,932	2,242	140	209
Below ground.....	710,663	709,526	1,137		
Power used (aggregate horsepower).....	6,816,814	6,786,475	26,979	325	35
Capital.....	\$7,225,446,992	\$7,106,628,496	\$116,626,441	\$112,882	\$84,173
Principal expenses.....	2,556,682,424	2,545,925,350	10,493,020	171,850	92,204
Salaries.....	151,820,643	151,272,451	533,076	5,533	9,583
Wages.....	1,309,565,597	1,304,409,342	5,010,611	89,365	56,279
Supplies and materials.....	531,688,470	528,853,339	2,789,755	34,423	10,653
Cost of ore, coal, and natural gas purchased as material or for resale.....	35,905,352	35,905,352			
Fuel and purchased power.....	124,610,053	123,509,588	1,080,348	14,560	5,557
Royalties and rents.....	176,478,995	175,129,358	314,066	26,282	8,789
Taxes.....	141,878,154	141,567,734	307,390	1,687	1,343
Contract work.....	82,696,372	82,239,098	457,774		
Value of products.....	\$3,174,507,462	\$3,158,463,966	15,634,801	260,538	153,157

<sup>1</sup> For Alaska a report for Sept. 15 was requested.

Less than 2 per cent of the total number of enterprises reported and less than one-third of 1 per cent of the persons engaged in the mining industries were in Alaska. The mining operations in Hawaii and Porto Rico were insignificant. The value of products of the mining industries in the outlying territories was approximately one-half of 1 per cent of the aggregate for the United States and its territories. Owing to the fact that there were few mining enterprises in Alaska, Hawaii, and Porto Rico and that the operations conducted by them were relatively unimportant, and to the additional fact that the canvass made in the territories was somewhat different in scope and form of inquiry from the canvass made in continental United States, the discussion and presentation of statistics relating to mining operations are confined in this section of the report, except in Table 1, to the data reported for the continental United States (referred to simply as the United States). The statistics for Alaska are presented in a separate section relating to that territory whereas those for Hawaii and Porto Rico are presented only in the preceding table.

**Principal statistics for producing and nonproducing enterprises: 1919.**—At the Fourteenth Census 21,280 producing mining enterprises were reported for the

United States. These employed an average of 981,560 wage earners, used power equipment rated at 6,750,000 horsepower and had invested capital amounting to approximately \$7,000,000,000. The principal expenses of these enterprises in 1919 amounted to more than \$2,500,000,000, of which \$311,000,000 was for development work, and the products were valued at more than \$3,158,000,000. The census also reported 717 nonproducing enterprises which, in 1919, employed an average of 5,624 wage earners, had invested capital amounting to \$153,000,000. The principal expenses of this class of enterprises amounted to over \$25,000,000, of which nearly \$23,000,000 was for development work. Table 2 compares the principal statistics for producing and nonproducing enterprises in the United States and shows the per cent which the amount of each item reported for nonproducing operations is of the total. The most satisfactory index of the relative importance of the two classes of enterprises is the average number of wage earners employed, the figures for nonproducing enterprises representing six-tenths of 1 per cent of the total. It will be seen that for 1919 nonproducing enterprises, that is, those whose activities were limited to development or exploration in anticipation of productive operations, were relatively unimportant.

TABLE 2.—PRINCIPAL STATISTICS, PRODUCING AND NONPRODUCING ENTERPRISES: 1919.

	All enterprises.	Producing enterprises.	NONPRODUCING ENTERPRISES.	
			Number or amount.	Per cent of total.
Number of enterprises.....	21,997	21,280	717	3.3
Number of mines and quarries.....	14,417	13,844	573	4.0
Number of petroleum and natural-gas wells.....	257,678	257,678		
Number of natural-gas gasoline plants.....	1,115	1,115		
Persons engaged.....	1,064,796	1,077,675	7,121	0.7
Proprietors and firm members.....	22,155	21,918	237	1.1
Number performing manual labor.....	5,272	5,245	27	0.5
Salaries employees.....	75,457	74,197	1,260	1.7
Wage earners (average number).....	987,184	981,560	5,624	0.6
Wage earners, Dec. 15, or nearest representative day.....	1,096,458	1,088,189	8,269	0.8
Above ground.....	386,982	382,766	4,166	1.1
Below ground.....	706,526	706,423	4,108	0.6
Power used (aggregate horsepower).....	6,786,475	6,723,786	62,689	0.9
Capital.....	\$7,108,623,496	\$6,955,466,831	\$153,156,665	2.2
Principal expenses:				
Salaries.....	151,272,451	149,328,985	1,943,466	1.3
Wages.....	1,304,406,242	1,295,936,226	8,473,116	0.6
Supplies and materials.....	528,853,630	519,593,676	9,259,953	1.8
Cost of ore, coal, and natural gas purchased as material or for resale.....	35,905,352	35,905,352		
Fuel and purchased power.....	123,509,588	122,105,980	1,403,608	1.1
Royalties and rents.....	176,129,858	175,293,964	835,874	0.5
Taxes.....	141,567,734	140,999,626	568,108	0.4
Contract work.....	82,239,098	79,389,177	2,858,921	3.5
Expenditures for development (included in the above items).....	334,015,265	311,276,508	22,738,757	6.8
Value of products.....	3,158,463,966	3,158,463,966		

Although of minor importance the data relating to nonproducing enterprises are necessarily included in a complete canvass of mining activities, but a distinction between nonproducing and producing enterprises and a separate presentation of data relating to them is necessary to preserve the proper balance between the various items reported, and especially to keep the figures in regard to production in proper relation to figures on various factors of operation, such as the number of persons employed, power used, and expenses of operation, etc. For purposes of comparison, moreover, especially between states, industries, or censuses, it is necessary to confine the statistical presentations and discussions to the data for producing enterprises. Therefore, as well as because of the small importance of nonproducing activities in 1919, the remaining text and tables in this section will deal only with producing enterprises.

**Principal mining industries.**—In Table 3 the principal mining industries in 1919 are ranked according to value of products. This table shows the number of enterprises in each industry, the average number of wage earners employed, and the value of products with the per cent distribution for the last two items.

Statistics are presented for 12 industries which in 1919 had products exceeding \$10,000,000 in value. These 12 industries contributed 98 per cent of the total value of products of the mining industries and employed 97.6 per cent of the total average number of wage earners engaged in producing enterprises.

Statistics are also given for five other mining industries having products between \$4,000,000 and \$10,000,000 in value. The 17 industries shown separately in this table employed 98.9 per cent of the total average number of wage earners in productive mining enterprises, and contributed 99.2 per cent of the total value of products of the mining industries.

TABLE 3.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	21,280	981,560	100.0	\$3,158,463,966	100.0
Coal.....	6,890	693,170	70.6	1,510,081,707	47.8
Anthracite.....	264	147,372	15.0	394,084,142	11.5
Bituminous.....	6,626	545,798	55.6	1,115,977,565	35.3
Petroleum and natural gas.....	9,814	93,206	9.5	931,739,423	29.5
Iron ore.....	290	45,741	4.7	218,217,905	6.9
Copper.....	195	43,717	4.5	181,258,087	5.7
Lead and zinc.....	432	21,884	2.2	75,579,347	2.4
Gold and silver, lode mines.....	740	15,438	1.6	58,832,330	1.9
Limestone.....	895	22,069	2.2	52,943,924	1.7
Granite.....	358	8,049	0.8	18,279,345	0.6
Sulphur.....	4	1,129	0.1	17,985,882	0.6
Sandstone.....	255	4,287	0.4	10,684,969	0.3
Phosphate rock.....	48	4,373	0.4	10,300,198	0.3
Clay.....	345	5,453	0.6	10,086,298	0.3
Basalt.....	163	3,336	0.3	9,657,977	0.3
Gold, placer mines.....	112	1,380	0.1	9,368,561	0.3
Gypsum.....	47	2,191	0.2	6,805,940	0.2
Slate.....	101	3,513	0.4	5,720,792	0.2
Marble.....	48	1,732	0.2	4,397,912	0.1
All other.....	543	10,895	1.1	26,539,369	0.8

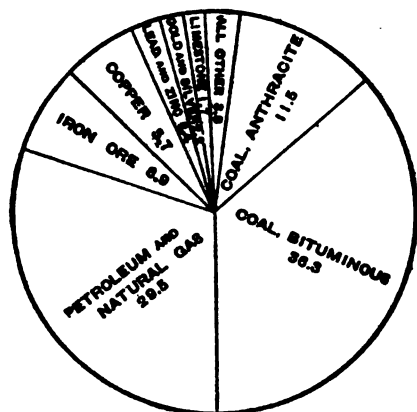
Coal mining far outranked all other industries in importance. In 1919 it contributed nearly one-half of the total value of products reported, and it furnished occupation to more than 70 per cent of all the wage earners employed by producing mining, quarrying, and well operations. Anthracite mines furnished approximately one-fourth and the bituminous coal mines three-fourths of the total value of coal produced, but the anthracite mines employed only a little more than one-fifth of the average number of wage earners while bituminous mines employed four-fifths of that number. The other industry producing mineral fuel—petroleum and natural gas—ranked second in importance in value of products, with nearly three-tenths of the total for the United States. This industry also ranked second in the number of wage earners employed which number was, however, less than one-tenth of the total for the United States.

The industries next in importance on the basis of the value of products, in the order named, were the mining of iron ore, copper ores, lead and zinc ores, and gold and silver ores. The quarrying of limestone, which ranked next to gold and silver mining in value of products, outranked both lead and zinc and gold and silver mining in the number of wage earners employed. Taken collectively, the stone-quarrying industries—limestone, granite, sandstone, basalt, slate, and marble—ranked fifth, that is, next after copper mining, in

both the number of wage earners employed and value of products.

The relative importance of the value of products of the several mining industries in 1919 are shown graphically by the diagram following.

PERCENTAGE DISTRIBUTION OF VALUE OF PRODUCTS, BY INDUSTRIES: 1919.



**By-products.**—The values of products given in the foregoing table and discussion include, in addition to the values of the minerals indicated by the name of the industry, the value of by-products. The term "by-products" is here used to designate collectively mineral and other products and the receipts for custom milling or other processes, for power sold, and for work or miscellaneous services furnished other enterprises, all of which were incident to the production of the principal mineral product.

Table 4 shows the value of the different classes of by-products for all industries combined and for each industry separately. Table 5 shows the value of the different classes of by-products reported for the United States and for each state separately. Table 6 shows the various by-products, the number of states, enterprises, and industries reporting each by-product.

TABLE 4.—VALUE OF BY-PRODUCTS, BY CLASSES, FOR EACH INDUSTRY: 1919.

INDUSTRY.	Total.	Mineral.	Not specified.	Custom milling, etc.	Power sold and work or miscellaneous services for other enterprises.
All industries.....	\$9,569,113	\$2,153,489	\$490,684	\$1,110,265	\$5,814,675
Coal:					
Anthracite.....	139,368		8,750		130,618
Bituminous.....	1,654,918	486,831	6,194		1,161,893
Petroleum and natural gas.....	3,095,608				3,095,608
Iron ore.....	268,504	150,756	7,134		110,704
Copper.....	995,982	5,433	271,897		718,652
Lead and zinc.....	325,827	83,706	99,338		101,299
Gold and silver, lode mines.....	1,022,013	90,734	1,201	793,199	136,889
Gold, placer mines.....	69,241	67,675		1,000	566
Stone:					
Limestone.....	976,407	589,884	148,814		237,709
Granite.....	31,728		6,250		25,478
Sandstone.....	12,835		400		12,435
Basalt.....	227,449	33	190,646		36,770
Slate.....	738				738
Marble.....	12,059	12,059			

TABLE 4.—VALUE OF BY-PRODUCTS, BY CLASSES, FOR EACH INDUSTRY: 1919—Continued.

INDUSTRY.	Total.	Mineral.	Not specified.	Custom milling, etc.	Power sold and work or miscellaneous services for other enterprises.
Abrasive materials.....	\$17,038	\$16,344			\$694
Barytes.....	18,316	18,316			
Clay.....	373,657	349,064	\$4,535		20,058
Feldspar.....	8,788	2,273	2,926		3,589
Fluorspar.....	48,224	45,823		\$215	2,186
Graphite.....	750		750		
Magnesite.....	210				210
Manganese.....	32,950	32,440			510
Mica.....	599	224			375
Mineral pigments.....	20,276	15,493	1,183		3,600
Phosphate rock.....	7,208	197			7,011
Pyrite.....	193,509	180,946	12,563		
Rare metals.....	2,480			2,480	
Silica.....	4,699	4,699			
Sulphur.....	1,614				1,614
Talc and soapstone.....	6,019	569			5,450

TABLE 5.—VALUE OF BY-PRODUCTS, BY CLASSES, FOR EACH STATE: 1919.

	Total.	Mineral.	Not specified.	Custom milling, etc.	Power sold and work or miscellaneous services for other enterprises.
United States.....	\$9,569,113	\$2,153,489	\$490,684	\$1,110,265	\$5,814,675
Alabama.....	33,610	33,610			
Arizona.....	752,152	3,597		31,417	717,138
Arkansas.....	13,916				13,916
California.....	1,145,719	224,578	1,374	67,434	852,833
Colorado.....	599,012	98,492	92,313	361,433	40,774
Connecticut.....	6,260		6,260		
Delaware.....	19,020		4,520		14,500
Florida.....	5,000	197			4,803
Georgia.....	31,621	17,500	13,746		375
Idaho.....	8,216			8,193	23
Illinois.....	222,000	108,124	11,434		102,442
Indiana.....	61,801	38,073			23,728
Iowa.....	10,211				10,211
Kansas.....	67,814				67,814
Kentucky.....	127,138	6,356		215	120,568
Louisiana.....	86,032				86,032
Maine.....	3,598	672	2,926		
Maryland.....	23,275	23,023			252
Massachusetts.....	3,015	33			2,982
Michigan.....	323,339	118,971		175,006	29,362
Minnesota.....	44,672				44,672
Missouri.....	52,180	19,599	10,995	1,796	19,820
Montana.....	215,159	115,060		4,817	95,282
Nebraska.....	694				694
Nevada.....	468,655		450	450,624	17,581
New Hampshire.....	224				224
New Jersey.....	93,655	11,534			82,121
New Mexico.....	45,308			1,338	43,970
New York.....	84,636	35,316	9,949		39,371
North Carolina.....	8,350	4,800			3,550
North Dakota.....	779				779
Ohio.....	976,088	795,592	3,653		176,843
Oklahoma.....	1,076,195				1,076,195
Oregon.....	4,966	4,841	15		110
Pennsylvania.....	1,883,763	353,607	253,371		1,276,785
Rhode Island.....	1,634				1,634
South Carolina.....	6,229				6,229
South Dakota.....	3,289			3,289	
Tennessee.....	70,375	5,711			64,664
Texas.....	310,340				310,340
Utah.....	74,905	1,946		74	72,885
Vermont.....	5,925				5,925
Virginia.....	21,640				21,640
Washington.....	70,769	7,330			63,439
West Virginia.....	391,986	100,523	3,000		288,463
Wisconsin.....	96,326	14,818	76,688	4,659	161
Wyoming.....	17,634	8,758			8,876

TABLE 6.—BY-PRODUCTS: 1919.

BY-PRODUCT.	Number of states reporting.	Number of enterprises reporting.	Number of industries reporting.	Value.
Total.....	47	1 508	30	\$9,599, 113
Mineral by-products.....				2,153, 489
Barytes.....	1	1	1	7, 600
Clay.....	7	37	5	340, 965
Coal, bituminous <sup>1</sup> .....	6	33	2	342, 228
Coke.....	3	3	1	96, 016
Copper.....	2	2	2	170, 502
Feldspar.....	2	3	3	3, 793
Fuller's earth.....	1	1	1	33
Gold and silver.....	3	3	2	33, 693
Iron.....	1	1	1	668
Lead and zinc.....	4	8	3	65, 011
Lime.....	5	12	1	574, 688
Limestone.....	4	4	3	19, 040
Manganese.....	5	5	3	210, 128
Marble.....	1	2	1	3, 849
Mica.....	2	5	2	3, 301
Mineral pigments.....	3	4	3	41, 706
Platinum.....	2	14	1	67, 675
Pyrite.....	6	17	4	140, 067
Sandstone.....	3	3	3	26, 918
Silica.....	2	2	2	997
Talc and soapstone.....	1	1	1	1, 699
Tungsten (rare metals).....	1	1	1	2, 887
Products not specified.....	14	35	15	490, 684
Custom milling, etc.....	13	31	9	1, 110, 265
Power, work, and miscellaneous services:				
Mines and quarries.....	40	315	23	2, 719, 067
Petroleum and natural-gas industry.....	14	( <sup>1</sup> )	1	3, 095, 608

<sup>1</sup> Enterprises reporting by-products in the petroleum and natural-gas industry were not enumerated.

<sup>2</sup> Quantity—139,607 net tons.

#### PROGRESS OF THE INDUSTRIES.

Comparative summary for producing enterprises: 1919, 1909, 1902, and 1889.—Table 7 gives the prin-

cipal statistics, in so far as comparable figures are available, for producing mines, quarries, and petroleum and natural-gas wells in the United States as reported at the census of 1919 and the three preceding censuses of mines and quarries. Even for the figures given there is not entire comparability because of different classifications in the mining industries at the different censuses. At the census of 1909 the conversion of coal into coke at the coal mines was included, but at the census of 1919 and the censuses for the two earlier years the coke industry was not included in the census of mines and quarries. The making of cement in 1902 and the burning of limestone into lime at the quarries in 1889 and 1902 were included in the statistics of mines and quarries in the censuses for those years, but were classified as manufacturing at the later censuses. No attempt has been made to adjust the figures in order to eliminate these and other differences.

Table 7 shows marked increases from 1889 to 1902 and from 1902 to 1909. It further shows that between 1909 and 1919 there was practically no increase in the number of enterprises, a decrease in the number of mines and quarries, and only a negligible increase in the number of wage earners employed. Large increases are shown for horsepower used, capital invested, and the principal expenses of operation, but the increases in expenses are mainly due to price increases, except the increase in "taxes," which is due to the impost of Federal income tax and special state taxes on mining since 1909.

TABLE 7.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919, 1909, 1902, AND 1889.

	1919	1909	1902	1889	PER CENT OF INCREASE. <sup>1</sup>		
					1909-1919	1902-1909	1889-1902
Number of enterprises.....	21, 280	21, 268	46, 858	( <sup>2</sup> )	0.1	—54.6	.....
Number of mines and quarries.....	13, 844	18, 164	17, 039	22, 084	—23.8	6.6	—22.8
Number of petroleum and natural-gas wells.....	267, 673	166, 320	123, 200	37, 410	54.9	35.0	229.3
Number of natural-gas gasoline plants.....	1, 115						.....
Persons engaged.....	1, 077, 675	1, 041, 682			3.5		.....
Proprietors and firm members, total.....	21, 918	29, 922	( <sup>3</sup> )	( <sup>3</sup> )	—26.7		.....
Number performing manual labor.....	5, 245	8, 861	( <sup>3</sup> )	( <sup>3</sup> )	—40.8		.....
Salaried employees.....	74, 197	44, 127	38, 128	6, 541	68.1	15.7	482.9
Wage earners (average number).....	981, 590	967, 633	581, 728	536, 043	1.4	66.3	8.5
Wage earners, December 15, or nearest representative day.....	1, 068, 189	1, 065, 283	* 581, 728	* 536, 043	2.2		8.5
Above ground.....	382, 766	396, 962	221, 505	244, 127	4.3	65.7	—9.3
Below ground.....	705, 423	698, 321	360, 223	291, 916	1.0	93.9	23.4
Power used (aggregate horsepower).....	6, 723, 786	4, 606, 263	2, 867, 562	( <sup>4</sup> )	45.9	60.7	.....
Capital.....	\$4, 955, 466, 831	\$3, 380, 525, 841	( <sup>5</sup> )	\$1, 310, 535, 318	106.8		.....
Principal expenses:							
Salaries.....	149, 328, 985	53, 393, 551	\$39, 020, 552	5, 520, 600	179.7	36.8	606.8
Wages.....	1, 235, 936, 226	596, 774, 079	366, 959, 960	222, 041, 887	103.8	58.6	66.6
Supplies and materials.....	519, 593, 676	173, 411, 438	* 123, 814, 967	86, 075, 925	199.6		43.8
Cost of ore, coal, and natural gas purchased as material or for resale.....	35, 905, 352	29, 318, 316			22.5		.....
Fuel and purchased power.....	122, 105, 930	45, 136, 550	( <sup>6</sup> )	( <sup>6</sup> )	170.5		.....
Royalties and rents.....	175, 293, 984	63, 973, 535	34, 530, 713	( <sup>6</sup> )	174.0	85.3	.....
Taxes.....	140, 999, 626	17, 796, 763	( <sup>6</sup> )	( <sup>6</sup> )	662.3		.....
Contract work.....	79, 380, 177	28, 887, 898	20, 677, 938	( <sup>6</sup> )	174.8	39.7	.....
Value of products.....	3, 158, 463, 966	1, 238, 410, 322	796, 826, 417	438, 111, 548	155.0	55.4	81.9

<sup>1</sup> A minus sign (—) denotes decrease. Percentages are omitted where figures are not comparable.

<sup>2</sup> Not reported.

<sup>3</sup> Average number.

<sup>4</sup> Comparable figures not available.

<sup>5</sup> Includes cost of fuel.

Comparative statistics in detail for the years 1919 and 1909, by industries, are given in the first of the general tables, page 40. Table 8 gives for the leading mining and quarrying industries the value of products in 1919, 1909, and 1902 with the percentages of increase, and the same information is presented graphically by the diagram herewith. The

TABLE 8.—COMPARISON OF VALUE OF PRODUCTS FOR THE LEADING MINING INDUSTRIES: 1919, 1909, AND 1902.

INDUSTRY.	1919	1909	1902	PER CENT OF INCREASE. <sup>1</sup>	
				1909-1919	1902-1909
Coal:					
Anthracite.....	\$364,084,142	\$149,180,471	\$76,173,586	144.1	95.8
Bituminous.....	1,145,977,565	427,962,464	290,858,483	167.8	47.1
Petroleum and natural gas	931,793,423	185,416,684	102,265,602	402.5	71.6
Iron ore.....	218,217,905	108,947,082	65,465,321	104.0	63.4
Copper.....	191,258,087	134,616,987	51,178,086	34.6	163.0
Lead and zinc.....	75,579,347	31,363,094	14,600,177	141.0	114.8
Gold and silver, lode mines	58,832,330	83,885,923	77,154,326	-29.9	8.7
Limestone.....	52,943,924	29,832,492	30,441,801	77.5	-2.0
Granite.....	18,279,345	18,997,976	18,257,944	-3.8	4.1
Sandstone.....	10,684,969	9,290,820	11,022,460	15.0	-15.7
Phosphate rock.....	10,300,198	10,781,192	4,922,943	-4.5	119.0
Gold, placer mines.....	9,268,551	10,287,252	5,327,726	-8.5	92.2

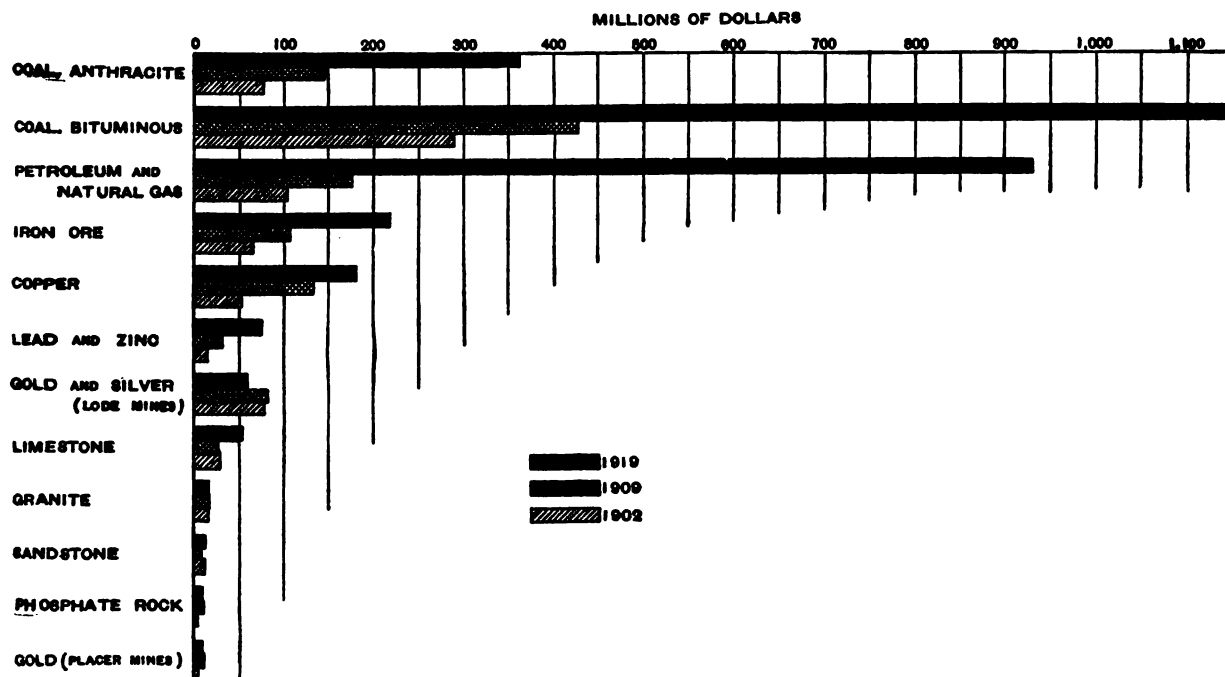
<sup>1</sup> A minus sign (-) denotes decrease.

greatest relative increase in the seven-year period, 1902-1909, was in the copper-mining industry. This increase is, however, misleading because the value for 1909 includes the value of smelter and refinery products, whereas the value for 1902 is limited to mine products. The next greatest relative increase for the period was in the phosphate-rock mining industry. The greatest decrease for the period 1909 to 1919 is

shown for gold and silver-lode mining which, with the placer-mining industry, suffered because of the fixed price of their principal product. The increases shown for the decennial period 1909 to 1919 are exaggerated and the decreases are understated because of the rise in prices. There were, nevertheless, large actual increases in coal-mining, petroleum, and natural-gas production. In the copper-mining industry the actual increase is masked in the table because smelter and refinery statistics were included with mining statistics for 1909. There were also smaller increases in iron-ore and lead and zinc mining and in limestone quarrying.

Comparative statistics in detail for the years 1919 and 1909, by states, are given in the second of the general tables, page 42. Table 9 gives for the leading states the value of products of the mining industries in 1919, 1909, and 1902, and the same information is shown by the diagram on page 24. The greatest relative increases for the seven-year period 1902-1909 were in Louisiana and Oklahoma, where there was great development of the oil and gas industry, and in Nevada where there was large increase in metal mining during that period. The greatest increases for the period 1909-1919 were shown in Texas and the next greatest in Oklahoma, Kentucky, and Louisiana, for which the great expansion in the petroleum and natural-gas industry were responsible. Notable increases are also shown for Kansas, Wyoming, West Virginia, New Mexico, and Virginia, and are ascribable largely, if not entirely, to growth in the coal-mining and petroleum and natural-gas industry. All these

VALUE OF PRODUCTS, LEADING MINING INDUSTRIES: 1919, 1909, AND 1902.



## MINES AND QUARRIES.

increases are, of course, exaggerated by the price increases during the decade. Very small increases are shown for Colorado and Missouri and decreases are

shown for Montana and Nevada. These changes were the result of depression in the metal-mining industries during 1919.

VALUE OF PRODUCTS, MINING INDUSTRIES, BY STATES: 1919, 1909, AND 1902.

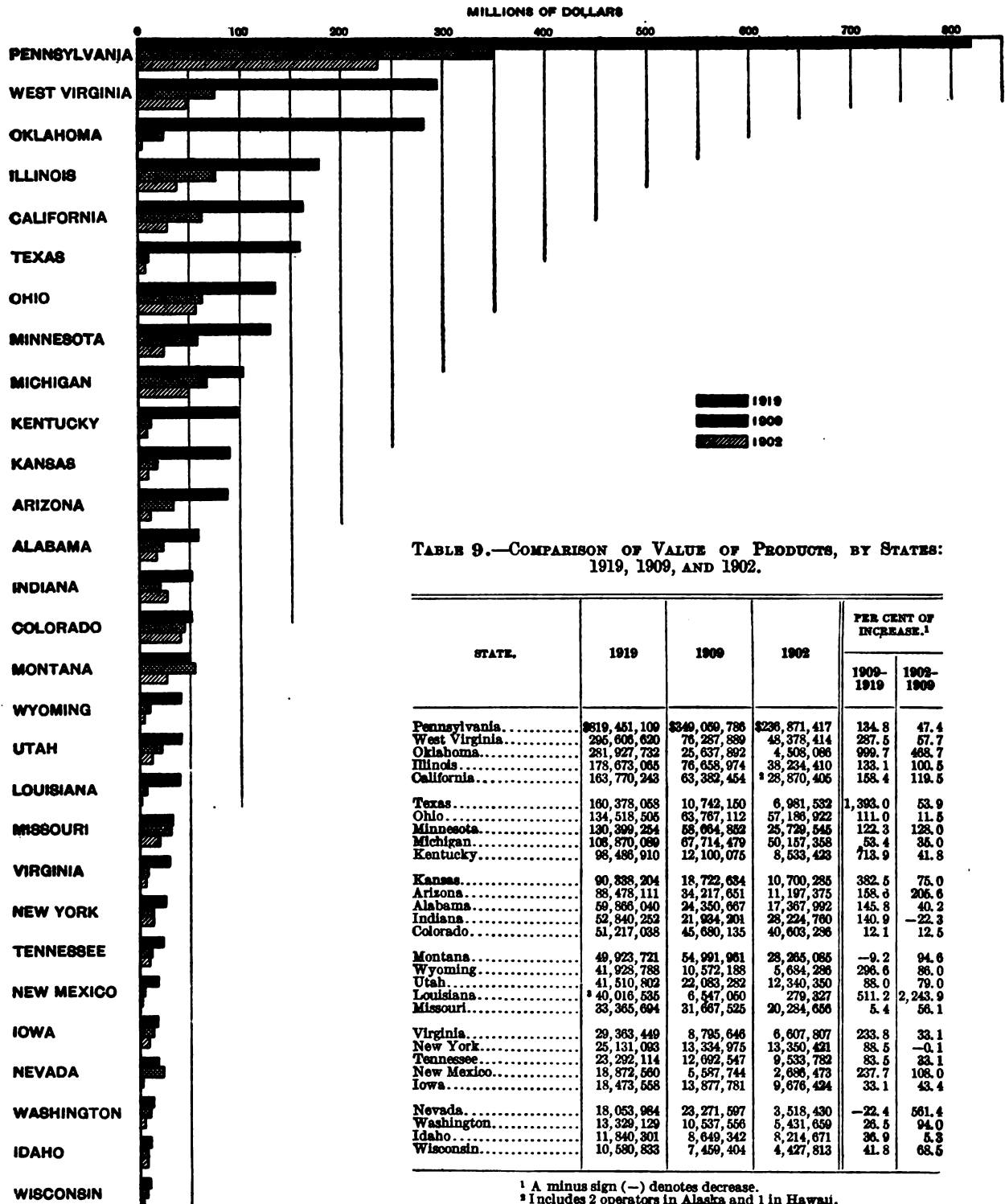


TABLE 9.—COMPARISON OF VALUE OF PRODUCTS, BY STATES: 1919, 1909, AND 1902.

STATE.	1919	1909	1902	PER CENT OF INCREASE. <sup>1</sup>	
				1909-1919	1902-1909
Pennsylvania.....	\$819,451,109	\$349,069,786	\$236,871,417	134.8	47.4
West Virginia.....	295,606,620	76,287,889	48,378,414	287.5	57.7
Oklahoma.....	281,927,732	25,637,892	4,508,066	999.7	468.7
Illinois.....	178,673,665	76,658,974	38,234,410	138.1	100.6
California.....	163,770,243	63,382,464	* 28,870,406	158.4	119.6
Texas.....	160,378,058	10,742,150	6,981,532	1,393.0	53.9
Ohio.....	134,518,506	63,767,112	57,186,922	111.0	11.6
Minnesota.....	130,399,264	68,664,862	28,729,545	122.3	128.0
Michigan.....	108,870,099	67,714,479	50,157,358	53.4	36.0
Kentucky.....	98,486,910	12,100,075	8,533,423	713.9	41.8
Kansas.....	90,838,204	18,722,634	10,700,235	382.5	75.0
Arizona.....	88,478,111	34,217,651	11,197,375	158.6	206.6
Alabama.....	59,866,040	24,350,667	17,367,992	145.8	40.2
Indiana.....	52,840,252	21,984,201	26,224,780	140.9	-22.3
Colorado.....	51,217,038	45,680,135	40,603,236	12.1	12.5
Montana.....	49,923,721	54,991,961	28,265,065	-0.2	94.6
Wyoming.....	41,923,783	10,572,188	5,684,286	296.6	86.0
Utah.....	41,510,802	22,083,282	12,340,350	88.0	79.0
Louisiana.....	* 40,016,635	6,547,060	279,327	511.2	2,243.9
Missouri.....	33,365,694	31,667,525	20,234,656	5.4	56.1
Virginia.....	29,363,449	8,795,646	6,607,807	233.8	33.1
New York.....	25,131,093	13,334,975	13,350,421	88.5	-0.1
Tennessee.....	23,292,114	12,692,547	9,533,782	83.5	33.1
New Mexico.....	18,872,560	5,587,744	2,686,473	237.7	108.0
Iowa.....	18,473,558	13,877,781	9,676,424	33.1	43.4
Nevada.....	18,053,984	23,271,597	3,518,430	-22.4	561.4
Washington.....	13,329,129	10,537,556	5,431,659	26.5	94.0
Idaho.....	11,840,301	8,649,342	8,214,671	36.9	8.3
Wisconsin.....	10,580,833	7,459,404	4,427,813	41.8	68.5

<sup>1</sup> A minus sign (-) denotes decrease.

\* Includes 2 operators in Alaska and 1 in Hawaii.

\* Includes Mississippi.

GEOGRAPHIC DISTRIBUTION.

Distribution of mining enterprises by geographic divisions: 1919.—The distribution of the mining industries by geographic divisions is shown in Table 10 and by states in Table 11. These tables give the number of enterprises, mines, quarries, and wells and also the average number of wage earners employed and the value of products with the per cent distribution for wage earners and value of products.

TABLE 10.—STATISTICS FOR PRODUCING ENTERPRISES, BY GEOGRAPHIC DIVISIONS: 1919.

DIVISION.	Number of enterprises.	Number of mines and quarries.	Number of wells.	WAGE EARNERS.		VALUE OF PRODUCTS.	
				Average number.	Per cent of total.	Amount.	Per cent of total.
United States.....	21,280	13,844	257,673	981,560	100.0	\$3,158,463,966	100.0
New England.....	302	334	.....	7,213	0.7	18,723,573	0.6
Middle Atlantic.....	6,604	3,870	91,511	334,175	34.0	853,891,104	27.0
East North Central.....	3,776	2,324	54,413	190,011	19.4	480,482,744	15.2
West North Central.....	1,722	1,270	12,691	62,253	6.3	280,111,296	8.9
South Atlantic.....	2,284	1,976	27,363	129,707	13.2	352,073,775	11.1
East South Central.....	1,405	1,475	5,228	90,612	9.2	181,645,064	5.8
West South Central.....	2,821	495	56,087	60,936	6.2	490,726,862	15.5
Mountain.....	1,508	1,598	1,183	81,519	8.3	321,825,305	10.2
Pacific.....	858	502	9,197	25,134	2.6	178,984,243	5.7

The Middle Atlantic division easily ranked first among the several geographic divisions, the value of its mineral products during 1919 amounting to \$853,891,104, or 27 per cent of the total value for the United States. Next in order was the West South Central division, with products valued at \$490,726,862, or

15.5 per cent of the total. The mineral products of the first division consisted largely of coal and of the second, mainly of petroleum and natural gas. Other divisions with considerable mineral production are the East North Central, South Atlantic, and the Mountain divisions. The percentage distribution of the value of products by geographic divisions for 1919 is shown graphically by the diagram herewith.

PERCENTAGE DISTRIBUTION OF VALUE OF PRODUCTS, BY GEOGRAPHIC DIVISIONS: 1919.

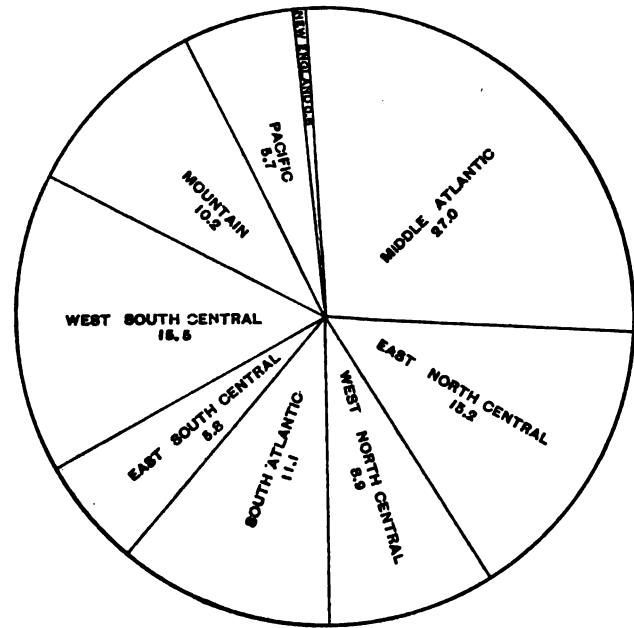


TABLE 11.—STATISTICS FOR PRODUCING ENTERPRISES, BY STATES: 1919.

STATE.	Number of enterprises.	Number of mines and quarries.	Number of wells.	WAGE EARNERS.		VALUE OF PRODUCTS.		STATE.	Number of enterprises.	Number of mines and quarries.	Number of wells.	WAGE EARNERS.		VALUE OF PRODUCTS.	
				Average number.	Per cent of total.	Amount.	Per cent of total.					Average number.	Per cent of total.	Amount.	Per cent of total.
United States.....	21,280	13,844	257,673	981,560	100.0	\$3,158,463,966	100.0	Montana.....	259	269	28	16,129	1.6	\$49,923,721	1.6
Alabama.....	264	348	.....	32,579	3.3	59,866,040	1.9	Nebraska.....	9	9	.....	162	(1)	292,766	(1)
Arizona.....	155	172	.....	15,268	1.6	83,478,111	2.8	Nevada.....	203	207	.....	4,231	0.4	18,053,984	0.6
Arkansas.....	126	126	124	3,630	0.4	8,404,537	0.3	New Hampshire.....	30	33	.....	682	0.1	1,568,195	(1)
California.....	725	357	9,197	19,344	2.0	163,770,243	5.2	New Jersey.....	97	102	.....	4,576	0.5	9,308,902	0.3
Colorado.....	477	523	70	16,790	1.7	51,217,038	1.6	New Mexico.....	85	103	1	7,100	0.7	18,872,560	0.6
Connecticut.....	41	47	.....	543	0.1	1,649,003	0.1	New York.....	700	147	14,186	6,202	0.6	25,131,063	0.3
Delaware.....	7	8	.....	116	(1)	243,647	(1)	North Carolina.....	102	106	.....	1,890	0.2	2,736,543	0.1
District of Columbia.....	3	3	.....	12	(1)	15,627	(1)	North Dakota.....	79	79	.....	774	0.1	1,927,304	0.1
Florida.....	36	55	.....	3,372	0.3	8,976,413	0.3	Ohio.....	2,283	1,064	35,440	49,298	5.0	134,518,505	4.3
Georgia.....	74	82	.....	2,307	0.2	4,082,152	0.1	Oklahoma.....	1,934	284	44,735	33,914	3.5	281,927,732	8.9
Idaho.....	82	83	.....	2,455	0.3	11,840,301	0.4	Oregon.....	50	52	.....	740	0.1	1,884,871	0.1
Illinois.....	772	590	16,498	79,123	8.1	178,673,065	5.7	Pennsylvania.....	5,807	3,621	77,325	323,397	32.9	819,451,109	25.9
Indiana.....	503	398	2,456	26,751	2.7	52,840,252	1.7	Rhode Island.....	14	15	.....	369	(1)	952,204	(1)
Iowa.....	198	226	.....	11,274	1.1	18,473,558	0.6	South Carolina.....	20	20	.....	933	0.1	1,350,747	(1)
Kansas.....	814	238	12,690	16,136	1.6	90,338,204	2.9	South Dakota.....	23	28	1	1,785	0.2	5,314,516	0.2
Kentucky.....	938	864	5,214	43,563	4.4	98,486,910	3.1	Tennessee.....	203	263	14	14,470	1.5	23,292,114	0.7
Louisiana and Mississippi.....	137	4	2,479	5,228	0.5	40,016,535	1.3	Texas.....	624	81	8,749	18,164	1.9	160,378,058	5.1
Maine.....	50	51	.....	979	0.1	1,823,442	0.1	Utah.....	141	154	.....	9,847	1.0	41,510,802	1.3
Maryland.....	126	161	.....	5,628	0.6	9,698,577	0.3	Vermont.....	93	109	.....	2,938	0.3	8,555,030	0.3
Massachusetts.....	74	79	.....	1,704	0.2	4,175,699	0.1	Virginia.....	202	216	.....	14,547	1.5	29,363,449	0.9
Michigan.....	122	165	19	31,292	3.2	103,870,089	3.3	Washington.....	83	93	.....	5,050	0.5	13,329,129	0.4
Minnesota.....	135	196	.....	17,285	1.8	130,399,254	4.1	West Virginia.....	1,714	1,325	27,363	100,812	10.3	295,606,620	9.3
Missouri.....	468	494	.....	14,857	1.5	33,365,694	1.1	Wisconsin.....	92	107	.....	3,547	0.4	10,580,833	0.3
								Wyoming.....	106	87	1,084	9,669	1.0	41,928,788	1.3

<sup>1</sup> Less than one-tenth of 1 per cent.

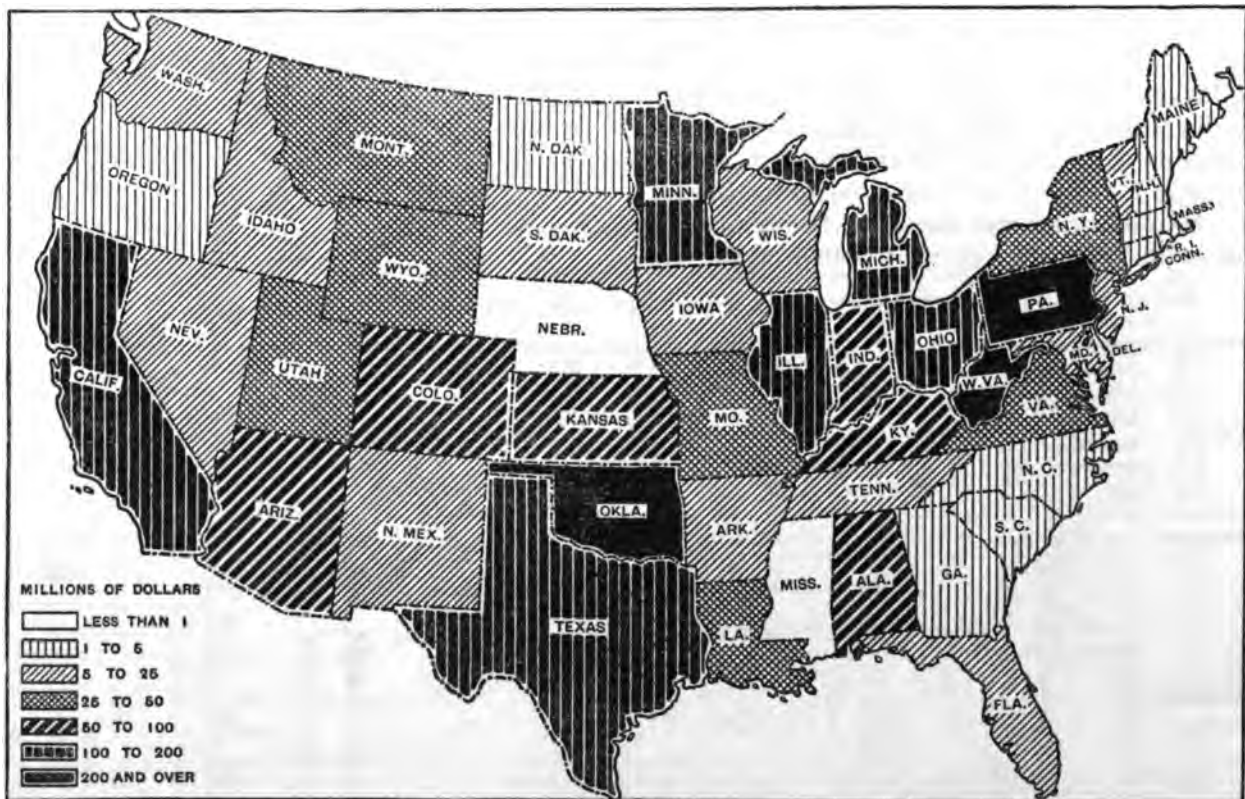


The prominence of the Middle Atlantic division in mineral production is due wholly to the state of Pennsylvania, which, as shown in Tables 9 and 11, with products (mainly coal) valued at over \$800,000,000, in 1919 reported more than one-fourth of the value of all mineral products in the United States. No other state approaches Pennsylvania in importance in the mining industries. West Virginia, which ranks second, had products valued at nearly \$300,000,000, about two-thirds of which was the value of coal and about one-third the value of petroleum and natural gas. The total value of products for this state was a little more than one-third of the value shown for Pennsylvania and 9.3 per cent of the total shown for the United States. Oklahoma ranked third with products, mainly petroleum and natural gas, valued at nearly \$282,000,000, or a little more than one-third of the value shown for Pennsylvania and 8.9 per cent of the total for the United States. Other states having mineral products valued at more than \$100,000,000

in 1919 were Illinois, California, Texas, Ohio, Minnesota, and Michigan. The nine states named, reported in 1919, 71.8 per cent of the value of all mineral products for the United States.

There are several states in which the mineral production is quite insignificant—Connecticut, Delaware, District of Columbia, Maine, Mississippi, Nebraska, New Hampshire, North Carolina, North Dakota, Oregon, Rhode Island, and South Carolina each contributing less than one-tenth of 1 per cent of the value of mineral products. The value of products for Arkansas, Florida, Georgia, Idaho, Maryland, Massachusetts, New Jersey, South Dakota, Vermont, Washington, and Wisconsin were each less than one-half of 1 per cent of the total for the United States. The combined value of products of these 23 states was less than 4 per cent of the total for the United States. The map following shows the relative value of products of the mining industries in the several states.

VALUE OF PRODUCTS, MINING INDUSTRIES, BY STATES: 1919.



The distribution of wage earners employed in producing mining enterprises follows approximately the distribution of the total value of products except, however, that where coal is the chief mineral product the average number of wage earners is relatively greater, and where petroleum and natural gas are the principal products, the average number of wage earners is relatively less. Thus, as shown by Table 10, the Middle Atlantic division reported 34 per cent of all

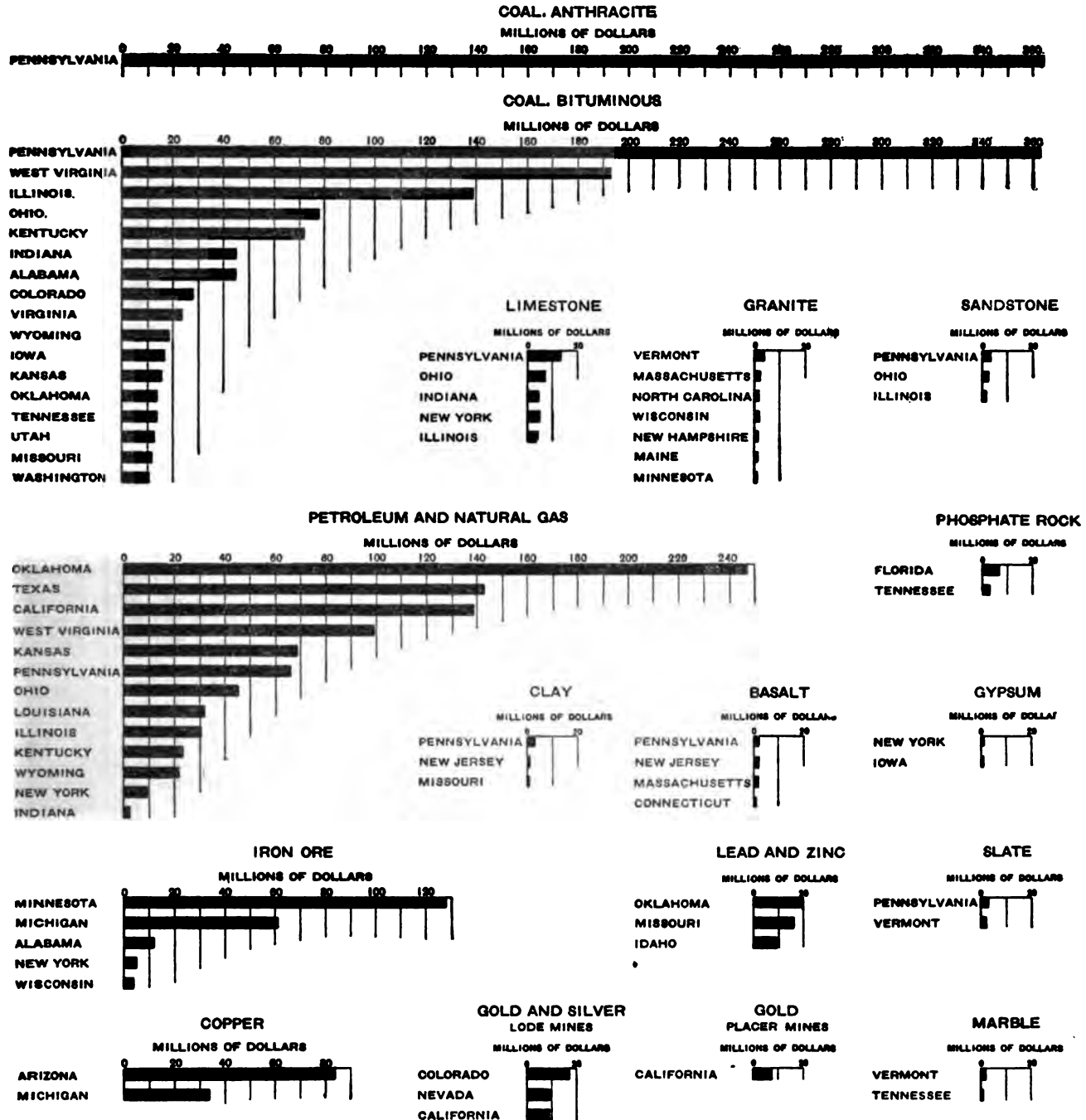
wage earners, a considerably greater percentage than its share of the total value of products. An excess in percentage of total wage earners over percentage of total value of products was also reported for the coal-producing East North Central and South Atlantic divisions, which ranked second and third, respectively, on the basis of wage earners employed. The reverse is markedly the case in the West South Central division, in which petroleum and natural gas produc-

tion was the principal industry, and which ranked seventh in the average number of wage earners, but second in value of products.

Distribution of the principal industries by states: 1919.—Table 12 gives the number of enterprises, the average number of wage earners, and the value of

products for the leading states for each of 16 leading mining industries, and shows for each industry and state the per cent distribution of the total number of wage earners and total value of products. The same data on value of products are presented graphically by the diagram herewith.

VALUE OF PRODUCTS, LEADING MINING INDUSTRIES, BY STATES: 1919.



Pennsylvania contributed nearly one-third of the value of products of the bituminous coal mines in 1919, and the group of six contiguous states, Pennsylvania, West Virginia, Illinois, Ohio, Kentucky, and Indiana, together reported more than three-fourths of the total. The table shows altogether 17 states in all parts of

the United States each of which produced bituminous coal valued at more than \$10,000,000 and which together accounted for 96.5 per cent of the total.

The anthracite coal production is practically confined to the state of Pennsylvania and is shown separately for that state only.

TABLE 12.—PRINCIPAL INDUSTRIES, BY STATES, RANKED BY VALUE OF PRODUCTS, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND STATE.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY AND STATE.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent of total.	Amount.	Per cent of total.			Average number.	Per cent of total.	Amount.	Per cent of total.
COAL, ANTHRACITE.....	254	147,372	100.0	\$364,084,142	100.0	LIMESTONE <sup>4</sup> .....	865	22,069	100.0	\$52,943,924	100.0
Pennsylvania.....	254	147,372	100.0	364,084,142	100.0	Pennsylvania.....	184	5,573	25.3	12,881,213	24.3
COAL, BITUMINOUS.....	6,636	545,798	100.0	1,145,977,565	100.0	Ohio.....	90	2,282	10.2	6,742,496	12.7
Pennsylvania.....	1,938	154,922	28.4	362,973,952	31.7	Indiana.....	67	1,800	8.2	4,619,801	8.7
West Virginia.....	926	87,095	16.0	193,108,343	16.9	New York.....	55	1,789	7.9	4,597,942	8.7
Illinois.....	447	73,780	13.5	138,787,835	12.1	Illinois.....	41	1,244	5.6	3,776,626	7.1
Ohio.....	788	40,452	7.4	77,988,602	6.8	GRANITE.....	358	8,049	100.0	18,279,345	100.0
Kentucky.....	635	39,769	7.3	72,432,840	6.3	Vermont.....	27	1,062	13.2	3,563,734	19.5
Indiana.....	295	24,479	4.5	45,492,726	4.0	Massachusetts.....	42	1,034	12.8	2,405,165	13.2
Alabama.....	188	24,648	4.5	45,359,441	4.0	North Carolina.....	16	950	11.9	1,576,250	8.6
Colorado.....	161	11,252	2.1	23,342,195	2.5	Wisconsin.....	14	768	9.4	1,484,979	8.1
Virginia.....	108	11,215	2.1	23,763,440	2.1	New Hampshire.....	23	589	7.3	1,427,979	7.8
Wyoming.....	46	7,091	1.3	18,723,451	1.6	Maine.....	42	747	9.3	1,900,966	7.1
Iowa.....	167	10,584	1.9	16,903,358	1.5	Minnesota.....	27	392	4.9	1,135,291	6.2
Kansas.....	129	8,084	1.5	15,748,535	1.4	SANDSTONE.....	255	4,287	100.0	10,684,969	100.0
Oklahoma.....	94	7,040	1.3	14,477,317	1.3	Pennsylvania.....	100	1,678	39.0	3,534,563	33.1
Tennessee.....	107	9,556	1.8	14,024,432	1.2	Ohio.....	21	875	20.4	2,759,352	25.8
Utah.....	27	3,647	0.7	12,632,035	1.1	Illinois.....	15	288	6.7	1,320,389	12.4
Missouri.....	179	7,285	1.3	12,077,845	1.1	PHOSPHATE ROCK.....	48	4,373	100.0	10,300,198	100.0
Washington.....	35	4,413	0.8	10,737,456	0.9	Florida.....	23	2,330	53.3	6,678,888	64.8
PETROLEUM AND NATURAL GAS.....	9,814	93,205	100.0	931,793,423	100.0	Tennessee.....	19	1,568	35.9	3,139,671	30.5
Oklahoma.....	1,699	21,180	22.7	247,497,450	26.6	CLAY <sup>5</sup> .....	345	5,453	100.0	10,086,298	100.0
Texas.....	553	13,599	14.6	143,337,362	15.4	Pennsylvania.....	62	1,337	24.5	2,546,485	25.2
California.....	403	12,344	13.2	139,018,663	14.9	New Jersey.....	35	868	15.9	1,482,358	14.7
West Virginia.....	751	12,302	13.2	99,518,304	10.7	Missouri.....	41	622	11.4	1,420,585	14.1
Kansas.....	613	6,805	6.8	68,515,158	7.4	BASALT.....	163	3,336	100.0	9,657,977	100.0
Pennsylvania.....	3,140	9,065	9.7	66,271,961	7.1	Pennsylvania.....	29	721	21.6	2,298,791	23.8
Ohio.....	1,333	5,123	5.5	45,483,325	4.9	New Jersey.....	36	637	19.1	1,928,025	20.0
Louisiana.....	133	4,841	5.2	32,016,085	3.4	Massachusetts.....	21	547	16.4	1,548,611	16.0
Illinois.....	236	2,752	3.0	31,263,663	3.4	Connecticut.....	20	863	10.9	1,262,579	13.1
Kentucky.....	196	2,119	2.3	23,329,321	2.5	GOLD, PLACER MINES.....	112	1,380	100.0	9,268,561	100.0
Wyoming.....	39	2,167	2.3	21,959,937	2.4	California.....	60	1,102	79.9	7,967,654	84.7
New York.....	561	868	0.9	9,900,894	1.1	GYP SUM.....	47	2,191	100.0	6,305,940	100.0
Indiana.....	131	403	0.4	2,604,395	0.3	New York.....	6	400	18.3	1,110,463	16.3
IRON ORE.....	290	45,741	100.0	218,217,906	100.0	Iowa.....	5	444	20.3	1,092,920	16.1
Minnesota.....	89	16,236	35.5	128,377,174	58.8	SLATE.....	101	3,513	100.0	5,720,792	100.0
Michigan.....	65	16,160	35.3	60,906,692	27.9	Pennsylvania.....	42	1,892	53.9	2,651,533	46.3
Alabama.....	30	6,485	14.2	12,291,760	5.6	Vermont.....	38	1,039	29.6	2,057,388	36.0
New York.....	7	1,811	4.0	5,264,443	2.4	MARBLE.....	48	1,732	100.0	4,397,912	100.0
Wisconsin.....	6	1,145	2.5	3,226,872	1.8	Vermont.....	15	570	32.9	2,108,572	48.0
COPPER <sup>1</sup> .....	195	43,717	100.0	181,258,087	100.0	Tennessee.....	13	540	31.2	1,088,131	24.7
Arizona.....	75	14,287	32.6	84,217,141	46.5	LEAD AND ZINC <sup>2</sup> .....	432	21,884	100.0	75,579,347	100.0
Michigan.....	22	12,235	28.0	34,476,336	19.0	Oklahoma.....	111	5,253	24.0	18,979,726	25.1
LEAD AND ZINC <sup>2</sup> .....	432	21,884	100.0	75,579,347	100.0	Missouri.....	93	4,793	21.9	15,879,177	21.0
Oklahoma.....	111	5,253	24.0	18,979,726	25.1	Idaho.....	20	1,820	8.3	9,629,723	12.6
Missouri.....	93	4,793	21.9	15,879,177	21.0	GOLD AND SILVER, LODE MINES <sup>3</sup> .....	740	15,436	100.0	58,832,330	100.0
Idaho.....	20	1,820	8.3	9,629,723	12.6	Colorado.....	198	3,495	22.6	16,785,716	28.5
GOLD AND SILVER, LODE MINES <sup>3</sup> .....	740	15,436	100.0	58,832,330	100.0	Nevada.....	148	2,084	13.5	9,687,431	16.5
Colorado.....	198	3,495	22.6	16,785,716	28.5	California.....	99	2,881	18.7	8,773,757	14.9
Nevada.....	148	2,084	13.5	9,687,431	16.5						
California.....	99	2,881	18.7	8,773,757	14.9						

<sup>1</sup> Montana and Utah, ranking 3 and 4, respectively, not shown in order to avoid disclosure of individual operations.

<sup>2</sup> Montana, ranking 4, not shown in order to avoid disclosure of individual operations.

<sup>3</sup> Utah, ranking 4, not shown in order to avoid disclosure of individual operations.

<sup>4</sup> Michigan, ranking 6, not shown in order to avoid disclosure of individual operations.

<sup>5</sup> Ohio, ranking 4, not shown in order to avoid disclosure of individual operations.

The production of petroleum and natural gas was chiefly from three areas—in eastern, central, and western parts of the country. The central area, mainly in Kansas, Oklahoma, and Texas, reported nearly one-half of the total value of these products, and Oklahoma lead with 26.6 per cent of the total value of petroleum and natural-gas products for the United States. The eastern area was mainly in Pennsylvania, Ohio, and West Virginia, which states together reported nearly one-fourth of the total value. The area third in importance was in California, which reported a little more than one-seventh of the total value.

Localization of the metal-mining industry is more marked than for the fuel producing industries. Nearly one-half of the copper production was in Arizona and

nearly one-fifth in Michigan. These two states leading in this industry reported nearly two-thirds of the value of products of the copper mines. Nearly one-half of the value of lead and zinc mines was reported in Oklahoma and Missouri and with the Kansas production (not shown in the table) added to these more than one-half of the total value is accounted for in this central region. Gold and silver mining is practically limited to the Western states. The three leading states, Colorado, Nevada, and California, together reported three-fifths, and Colorado alone reported more than one-fourth of the total value of products of this industry. Nearly three-fifths of the value of iron ore mined was reported by one state, Minnesota, and the value of iron ore produced in the adjacent states, Michigan and Wisconsin, brought the total for this northern central

region to nearly nine-tenths of the total for the United States.

Stone-quarrying enterprises are very widely distributed throughout the country, but as shown by the value of products for the states, the industries are much more important in New England and Middle Atlantic states than elsewhere. The phosphate-rock industry is practically all concentrated in Florida and Tennessee.

CHARACTER OF ORGANIZATION.

Table 13 presents a classification of mining enterprises according to the character, corporate or other, of the organizations operating them. The table gives, for all industries combined and for each of the leading industries separately, the number of enterprises operated by each form of organization and shows the average number of wage earners employed and the value of products with the distribution by classes.

TABLE 13.—CHARACTER OF ORGANIZATION, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.			INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enter-prise.	Wage earners.	Value of products.				Total.	Per enter-prise.	Enter-prise.	Wage earners.	Value of products.
<b>ALL INDUSTRIES</b>	21,280	981,500	\$3,158,463,906	\$148,424	100.0	100.0	100.0	<b>GRANITE</b>	358	8,049	\$18,279,345	\$51,060	100.0	100.0	100.0
Corporation.....	10,879	924,421	2,954,789,792	271,605	51.1	94.2	93.6	Corporation.....	152	6,302	14,504,529	95,425	42.5	79.4	79.3
Individual.....	4,312	24,107	71,982,739	16,694	20.3	2.6	2.8	Individual.....	126	938	2,108,442	16,742	35.2	11.7	11.5
Firm <sup>1</sup> .....	5,249	28,916	103,683,684	19,733	24.7	2.9	3.3	Firm <sup>1</sup> .....	80	719	1,665,374	20,817	22.3	8.9	9.1
Other.....	840	4,116	28,077,751	33,343	3.9	0.4	0.9	<b>SULPHUR</b>	4	1,129	17,935,882	4,483,971	100.0	100.0	100.0
<b>COAL, ANTHRACITE</b>	254	147,372	364,084,142	1,433,402	100.0	100.0	100.0	Corporation.....	4	1,129	17,935,882	4,483,971	100.0	100.0	100.0
Corporation.....	170	143,615	355,328,907	2,090,170	68.9	97.5	97.6	<b>SANDSTONE</b>	255	4,287	10,684,909	41,902	100.0	100.0	100.0
Individual.....	37	431	922,441	26,012	14.6	0.3	0.3	Corporation.....	142	3,574	9,405,068	66,233	55.7	83.4	88.0
Firm <sup>1</sup> .....	42	2,579	6,741,024	160,501	18.5	2.0	1.9	Individual.....	61	2,799	500,761	8,209	23.9	6.5	4.7
Other.....	5	447	1,051,770	210,354	2.0	0.3	0.3	Firm <sup>1</sup> .....	52	434	779,140	14,983	20.4	10.1	7.3
<b>COAL, BITUMINOUS</b>	6,636	645,798	1,145,977,565	172,691	100.0	100.0	100.0	<b>PHOSPHATE ROCK</b>	48	4,373	10,300,198	214,587	100.0	100.0	100.0
Corporation.....	4,325	515,692	1,065,004,874	250,868	65.2	94.5	94.7	Corporation.....	39	4,058	9,546,209	244,775	81.3	92.8	92.7
Individual.....	1,181	13,844	28,343,965	24,000	17.8	2.5	2.5	Individual.....	4	95	187,858	46,965	8.3	2.2	1.8
Firm <sup>1</sup> .....	1,095	14,847	30,100,087	27,489	16.5	2.7	2.6	Firm <sup>1</sup> .....	5	220	566,131	113,228	10.4	5.0	5.5
Other.....	35	1,415	2,528,639	72,247	0.5	0.3	0.2	<b>CLAY</b>	345	5,453	10,066,298	29,238	100.0	100.0	100.0
<b>PETROLEUM AND NATURAL GAS</b>	9,814	93,205	931,793,423	94,945	100.0	100.0	100.0	Corporation.....	212	4,480	8,034,433	37,998	61.4	82.2	79.7
Corporation.....	3,685	83,399	828,633,806	224,867	37.5	89.5	88.9	Individual.....	98	644	1,454,977	14,847	28.4	11.8	14.4
Individual.....	1,181	13,844	28,343,965	24,000	21.0	3.5	3.1	Firm <sup>1</sup> .....	35	329	596,888	17,054	10.1	6.0	5.9
Firm <sup>1</sup> .....	3,296	5,002	51,758,029	15,703	33.6	5.4	5.6	<b>BASALT</b>	163	3,336	9,657,977	59,251	100.0	100.0	100.0
Other.....	770	1,562	22,642,493	29,406	7.8	1.7	2.4	Corporation.....	104	2,809	8,327,873	80,076	63.8	84.2	86.2
<b>IRON ORE</b>	290	45,741	218,217,905	752,476	100.0	100.0	100.0	Individual.....	40	356	973,250	24,331	24.5	10.7	10.1
Corporation.....	267	45,152	216,718,813	811,681	92.1	98.7	99.3	Firm <sup>1</sup> .....	16	149	336,073	21,005	9.8	4.5	3.5
Individual.....	12	221	390,551	32,546	4.1	0.5	0.2	Other.....	3	22	20,781	6,927	1.8	0.7	0.2
Firm <sup>1</sup> .....	11	368	1,108,541	100,776	3.8	0.8	0.5	<b>GOLD, PLACER MINES</b>	112	1,380	9,368,561	83,648	100.0	100.0	100.0
<b>COPPER</b>	195	43,717	181,258,087	929,529	100.0	100.0	100.0	Corporation.....	45	1,259	8,965,148	199,226	40.2	91.2	95.7
Corporation.....	141	43,470	180,735,466	1,281,812	72.3	99.4	99.7	Individual.....	33	78	338,015	10,243	29.5	5.7	3.6
Individual.....	24	150	310,336	12,931	12.3	0.3	0.2	Firm <sup>1</sup> .....	34	43	65,398	1,923	30.4	3.1	0.7
Firm <sup>1</sup> .....	30	97	212,285	7,076	15.4	0.2	0.1	<b>GYPSUM</b>	47	2,191	6,805,940	144,807	100.0	100.0	100.0
<b>LEAD AND ZINC</b>	432	21,884	75,579,347	174,952	100.0	100.0	100.0	Corporation.....	43	2,176	6,782,826	157,740	91.5	99.3	99.7
Corporation.....	287	20,508	70,551,148	245,823	66.4	93.7	93.8	Individual.....	4	15	23,114	5,779	8.5	0.7	0.3
Individual.....	40	372	1,510,296	37,757	9.3	1.7	2.0	<b>SLATE</b>	101	3,513	5,720,792	56,642	100.0	100.0	100.0
Firm <sup>1</sup> .....	100	870	3,156,133	31,561	23.1	4.0	4.2	Corporation.....	71	3,007	5,021,062	70,719	70.3	85.6	87.8
Other.....	5	134	361,770	72,354	1.2	0.6	0.5	Individual.....	8	131	187,699	23,462	7.9	3.7	3.3
<b>GOLD AND SILVER, LOBE MINES</b>	740	15,436	58,832,330	79,503	100.0	100.0	100.0	Firm <sup>1</sup> .....	22	375	512,031	23,274	21.8	10.7	9.0
Corporation.....	396	14,448	55,715,104	140,695	53.5	93.6	94.7	<b>MARBLE</b>	48	1,732	4,397,912	91,623	100.0	100.0	100.0
Individual.....	138	401	802,301	5,814	18.6	2.6	1.4	Corporation.....	44	1,672	4,318,737	98,153	91.7	96.5	98.2
Firm <sup>1</sup> .....	196	480	1,993,422	9,916	26.8	3.1	3.3	Individual.....	4	60	79,175	19,794	8.3	3.5	1.8
Other.....	8	107	351,503	43,938	1.1	0.7	0.6	<b>LIMESTONE</b>	895	22,069	52,943,924	59,155	100.0	100.0	100.0
<b>LIMESTONE</b>	895	22,069	52,943,924	59,155	100.0	100.0	100.0	Corporation.....	462	18,324	45,890,005	99,330	51.6	83.0	86.7
Corporation.....	462	18,324	45,890,005	99,330	51.6	83.0	86.7	Individual.....	239	2,011	3,705,252	12,821	32.3	9.1	7.0
Individual.....	239	2,011	3,705,252	12,821	32.3	9.1	7.0	Firm <sup>1</sup> .....	140	1,685	3,112,907	22,235	15.6	7.4	5.9
Firm <sup>1</sup> .....	140	1,685	3,112,907	22,235	15.6	7.4	5.9	Other.....	4	99	235,160	58,790	0.4	0.4	0.4
Other.....	4	99	235,160	58,790	0.4	0.4	0.4								

<sup>1</sup> Includes 1 "other" form of organization.

<sup>2</sup> Includes 2 "other" forms of organization.

<sup>3</sup> Includes 2 firms.

Among 21,280 enterprises of producing mines, quarries, and wells 10,879, or slightly more than half, were conducted by corporations. These enterprises employed 94.2 per cent of the total average number of persons engaged in the mining enterprises and reported 93.6 per cent of the total value of products. Individuals conducted about one-fifth, firms and partner-

ships about one-fourth, and other forms of organizations only a very small part of the total number of enterprises, and the number of wage earners employed and the value of products reported by these classes were quite unimportant. Furthermore, the average value of products was \$271,605 per enterprise for those enterprises operated by corporations and only one-

eighth as much or less for enterprises operated by any other form of organization. Corporations were in the majority in each of the leading industries except petroleum and natural gas, granite, and gold-placer mining, and in these three they outnumbered organizations of other character and conducted the larger and more important enterprises.

SCALE OF OPERATION.

Size of enterprises by value of products.—Table 14 gives for all mining industries combined and for 16 leading mining industries separately a classification of enterprises according to value of products, and shows for each class the number of enterprises and the value of products with the per cent distribution.

TABLE 14.—SIZE OF PRODUCING ENTERPRISES, BY VALUE OF PRODUCTS: 1919.

INDUSTRY AND VALUE OF PRODUCTS PER ENTERPRISE.	Number.	Per cent distribution.	VALUE OF PRODUCTS.		INDUSTRY AND VALUE OF PRODUCTS PER ENTERPRISE.	Number.	Per cent distribution.	VALUE OF PRODUCTS.	
			Amount.	Per cent distribution.				Amount.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	21,280	100.0	\$3,158,463,986	100.0	<b>GOLD AND SILVER, LOSE MINES</b> .....	740	100.0	\$58,832,330	100.0
Less than \$5,000.....	6,586	30.9	15,228,604	0.5	Less than \$5,000.....	381	51.5	665,409	1.2
\$5,000 to \$20,000.....	5,539	26.0	58,745,473	1.9	\$5,000 to \$20,000.....	149	20.1	1,500,964	2.6
\$20,000 to \$100,000.....	4,990	23.5	237,600,990	7.5	\$20,000 to \$100,000.....	113	15.3	5,148,322	8.8
\$100,000 to \$500,000.....	3,005	14.1	636,788,422	21.7	\$100,000 to \$500,000.....	67	9.1	14,966,545	25.5
\$500,000 to \$1,000,000.....	684	3.2	472,131,636	14.9	\$500,000 to \$1,000,000.....	19	2.6	13,265,565	22.6
\$1,000,000 to \$5,000,000.....	892	4.2	754,180,595	23.9	\$1,000,000 and over <sup>1</sup> .....	11	1.5	23,244,626	39.8
\$5,000,000 and over.....	84	0.4	933,808,246	29.6	<b>LIMESTONE</b> .....	895	100.0	\$2,943,924	100.0
<b>COAL</b> .....	6,890	100.0	1,510,061,707	100.0	Less than \$5,000.....	208	23.2	507,076	1.6
Less than \$5,000.....	855	12.4	2,801,020	0.2	\$5,000 to \$20,000.....	259	28.9	2,915,575	8.5
\$5,000 to \$20,000.....	1,658	24.0	18,054,536	1.2	\$20,000 to \$100,000.....	310	34.6	14,429,913	27.3
\$20,000 to \$100,000.....	2,049	29.7	102,225,266	6.8	\$100,000 to \$500,000.....	108	11.5	20,334,355	38.4
\$100,000 to \$500,000.....	1,690	24.5	386,152,322	25.5	\$500,000 to \$1,000,000.....	10	1.1	6,304,629	12.0
\$500,000 to \$1,000,000.....	409	5.9	231,472,922	15.3	\$1,000,000 to \$5,000,000.....	8	0.6	7,352,376	13.9
\$1,000,000 to \$5,000,000.....	204	3.0	372,478,698	24.7	<b>GRANITE</b> .....	358	100.0	18,279,345	100.0
\$5,000,000 and over.....	27	0.4	336,878,848	22.3	Less than \$5,000.....	90	25.1	241,098	1.3
<b>ANTHRACITE</b> .....	254	100.0	364,084,142	100.0	\$5,000 to \$20,000.....	104	29.1	1,027,383	5.6
Less than \$5,000.....	37	14.6	89,997	( <sup>1</sup> )	\$20,000 to \$100,000.....	110	30.7	4,786,424	26.2
\$5,000 to \$20,000.....	38	15.0	440,045	0.1	\$100,000 to \$500,000.....	50	14.0	9,244,547	51.1
\$20,000 to \$100,000.....	43	16.9	1,843,631	0.5	\$500,000 and over <sup>2</sup> .....	4	1.1	2,879,896	15.8
\$100,000 to \$500,000.....	39	15.4	10,076,964	2.8	<b>SANDSTONE</b> .....	255	100.0	10,684,969	100.0
\$500,000 to \$1,000,000.....	32	12.6	24,276,649	6.7	Less than \$5,000.....	79	31.0	191,820	1.8
\$1,000,000 to \$5,000,000.....	48	18.9	93,096,309	22.8	\$5,000 to \$20,000.....	78	30.6	841,052	7.9
\$5,000,000 and over.....	17	6.7	244,270,547	67.1	\$20,000 to \$100,000.....	72	28.2	3,035,162	28.4
<b>BITUMINOUS</b> .....	6,636	100.0	1,145,977,565	100.0	\$100,000 and over <sup>3</sup> .....	26	10.2	6,616,935	61.9
Less than \$5,000.....	818	12.3	2,711,023	0.2	<b>PHOSPHATE ROCK</b> .....	48	100.0	10,300,198	100.0
\$5,000 to \$20,000.....	1,618	24.4	17,614,491	1.5	Less than \$20,000 <sup>4</sup> .....	8	16.7	66,217	0.6
\$20,000 to \$100,000.....	2,006	30.2	100,379,635	8.8	\$20,000 to \$100,000.....	16	33.3	807,741	8.7
\$100,000 to \$500,000.....	1,651	24.9	386,075,396	33.7	\$100,000 to \$500,000.....	17	35.4	4,052,511	39.3
\$500,000 to \$1,000,000.....	377	5.7	257,196,333	22.4	\$500,000 and over <sup>5</sup> .....	7	14.6	5,283,739	51.3
\$1,000,000 to \$5,000,000.....	156	2.4	289,302,324	25.3	<b>CLAY</b> .....	345	100.0	10,068,298	100.0
\$5,000,000 and over.....	10	0.2	92,608,301	8.1	Less than \$5,000.....	82	23.8	192,739	1.9
<b>PETROLEUM AND NATURAL GAS</b> .....	9,814	100.0	931,798,423	100.0	\$5,000 to \$20,000.....	118	34.2	1,245,365	12.4
Less than \$5,000.....	4,348	44.3	9,531,235	1.0	\$20,000 to \$100,000.....	127	36.8	5,949,044	59.0
\$5,000 to \$20,000.....	2,797	28.5	28,919,564	3.1	\$100,000 to \$500,000.....	18	5.2	2,666,150	26.7
\$20,000 to \$100,000.....	1,606	17.3	75,785,417	8.1	<b>BASALT</b> .....	163	100.0	9,657,977	100.0
\$100,000 to \$500,000.....	684	7.0	150,748,376	16.2	Less than \$5,000.....	20	12.3	48,084	0.5
\$500,000 to \$1,000,000.....	156	1.6	109,951,280	11.8	\$5,000 to \$20,000.....	40	24.5	490,470	5.1
\$1,000,000 to \$5,000,000.....	96	1.0	204,187,367	21.9	\$20,000 to \$100,000.....	77	47.2	3,850,020	39.9
\$5,000,000 and over.....	37	0.4	352,670,184	37.8	\$100,000 and over <sup>6</sup> .....	26	16.0	5,269,453	54.6
<b>IRON ORE</b> .....	290	100.0	218,217,905	100.0	<b>GOLD, PLACER MINES</b> .....	112	100.0	9,368,561	100.0
Less than \$5,000.....	15	5.2	36,040	( <sup>1</sup> )	Less than \$5,000.....	74	66.1	119,809	1.3
\$5,000 to \$20,000.....	29	10.0	392,775	0.2	\$5,000 to \$20,000.....	12	10.7	112,178	1.2
\$20,000 to \$100,000.....	69	23.8	3,774,321	1.7	\$20,000 to \$100,000.....	12	10.7	798,605	8.5
\$100,000 to \$500,000.....	98	33.8	26,453,784	12.1	\$100,000 to \$500,000.....	11	9.8	2,611,707	27.9
\$500,000 to \$1,000,000.....	41	14.1	28,239,920	12.9	\$500,000 and over <sup>7</sup> .....	3	2.7	5,726,262	61.1
\$1,000,000 to \$5,000,000.....	35	12.1	63,674,560	29.2	<b>GYPNUM</b> .....	47	100.0	6,905,940	100.0
\$5,000,000 and over.....	3	1.0	95,646,506	43.8	Less than \$5,000.....	3	6.4	5,042	0.1
<b>COPPER</b> .....	195	100.0	181,258,087	100.0	\$5,000 to \$20,000.....	5	10.6	69,164	1.0
Less than \$5,000.....	60	30.8	103,183	0.1	\$20,000 to \$100,000.....	18	38.3	941,620	13.8
\$5,000 to \$20,000.....	33	16.9	369,280	0.2	\$100,000 to \$500,000.....	18	38.3	4,100,134	60.2
\$20,000 to \$100,000.....	33	16.9	1,911,892	1.1	\$500,000 to \$1,000,000.....	3	6.4	1,689,980	24.8
\$100,000 to \$500,000.....	28	14.4	6,799,421	3.8	<b>SLATE</b> .....	101	100.0	5,720,792	100.0
\$500,000 to \$1,000,000.....	9	4.6	6,350,924	3.5	Less than \$5,000.....	13	12.9	36,448	0.6
\$1,000,000 to \$5,000,000.....	19	9.7	45,121,957	23.8	\$5,000 to \$20,000.....	21	20.8	276,624	4.8
\$5,000,000 and over.....	13	6.7	122,601,430	67.6	\$20,000 to \$100,000.....	55	54.5	2,764,500	48.3
<b>LEAD AND ZINC</b> .....	432	100.0	75,579,347	100.0	\$100,000 and over <sup>8</sup> .....	12	11.9	2,643,020	46.2
Less than \$5,000.....	135	31.3	261,492	0.3	<b>MARBLE</b> .....	48	100.0	4,397,912	100.0
\$5,000 to \$20,000.....	80	18.5	817,185	1.1	Less than \$5,000.....	4	8.3	10,702	0.2
\$20,000 to \$100,000.....	85	19.7	4,494,519	5.9	\$5,000 to \$20,000.....	8	16.7	81,157	1.8
\$100,000 to \$500,000.....	102	23.6	25,190,455	33.3	\$20,000 to \$100,000.....	25	52.1	1,265,344	28.5
\$500,000 to \$1,000,000.....	17	3.9	11,617,898	15.4	\$100,000 and over <sup>9</sup> .....	11	22.9	3,050,709	69.4
\$1,000,000 and over.....	13	3.0	33,197,888	43.9					

<sup>1</sup> Less than one-tenth of 1 per cent.  
<sup>2</sup> Includes the group "\$5,000,000 and over."  
<sup>3</sup> Includes the group "\$1,000,000 to \$5,000,000."

<sup>4</sup> Includes the groups "\$500,000 to \$1,000,000" and "\$1,000,000 to \$5,000,000."  
<sup>5</sup> Includes the group "Less than \$5,000."  
<sup>6</sup> Includes the group "\$500,000 to \$1,000,000."

SUMMARY OF RESULTS.

The relative importance of large scale and small scale production in mining is shown by the fact that 6,586 enterprises, or 30.9 per cent of the total, reported products valued at less than \$5,000 each, with an aggregate of \$15,228,604, or only five-tenths of 1 per cent of the total value of products; whereas 476 enterprises reporting products valued at more than \$1,000,000, although they constituted only 2.2 per cent of the total number of enterprises, reported over \$1,600,000,000, or 53.5 per cent of the total value of products. The part contributed by enterprises reporting more than \$1,000,000 worth of products was 33.4 per cent for bituminous coal and 89.9 per cent for anthracite coal;

59.7 per cent in the petroleum and natural-gas industry; ranged, in the metal-mining industries, from 39.5 per cent for gold and silver, lode mines, to 91.4 per cent for copper-mining enterprises; and was 73 per cent in the iron-ore-mining industry.

Size of enterprises by number of wage earners.—Table 15 gives, for all mining industries combined and for the 17 leading industries separately, a classification of producing enterprises according to the average number of wage earners employed and shows for each class the number and per cent distribution of wage earners and enterprises.

TABLE 15.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Average number.	Per cent distribution.		Number.	Per cent distribution.	Average number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	21,290	100.0	981,560	100.0	<b>LIMESTONE</b> .....	895	100.0	22,089	100.0
No wage earners.....	3,722	17.5	18,761	1.9	No wage earners.....	25	2.8	.....	.....
1 to 5.....	7,912	37.2	44,506	4.5	1 to 5.....	288	32.2	713	3.2
6 to 20.....	3,948	18.6	78,040	7.7	6 to 20.....	301	33.6	3,445	15.6
21 to 50.....	2,309	10.9	98,821	10.0	21 to 50.....	179	20.0	5,455	24.7
51 to 100.....	1,372	6.4	377,339	38.4	51 to 100.....	59	6.6	4,109	18.6
101 to 500.....	1,743	8.2	126,278	12.8	101 to 500.....	43	4.8	8,346	37.8
501 to 1,000.....	182	0.9	243,015	24.8	<b>LEAD AND ZINC</b> .....	432	100.0	21,884	100.0
Over 1,000.....	92	0.4	.....	.....	No wage earners.....	41	9.5	.....	.....
<b>COAL</b> .....	6,890	100.0	693,170	100.0	1 to 5.....	121	28.0	286	1.2
No wage earners.....	64	0.9	4,476	0.6	6 to 20.....	104	24.1	1,195	5.5
1 to 5.....	1,574	22.8	18,543	2.7	21 to 50.....	74	17.1	2,443	11.2
6 to 20.....	1,588	23.0	41,638	6.0	51 to 100.....	45	10.4	3,064	14.0
21 to 50.....	1,258	18.3	277,528	40.0	101 to 500.....	39	9.0	7,184	32.7
51 to 100.....	901	13.1	90,541	13.1	501 to 1,000.....	4	0.9	2,412	11.0
101 to 500.....	1,304	18.9	196,108	28.1	Over 1,000.....	4	0.9	5,350	24.4
501 to 1,000.....	134	1.9	.....	.....	<b>GOLD AND SILVER, LODGE MINES</b> .....	740	100.0	15,436	100.0
Over 1,000.....	67	1.0	.....	.....	No wage earners.....	151	20.4	.....	.....
<b>ANTHRACITE</b> .....	254	100.0	147,372	100.0	1 to 5.....	273	36.9	643	4.2
No wage earners.....	2	0.8	139	0.1	6 to 20.....	178	24.1	1,872	12.1
1 to 5.....	62	24.4	469	0.3	21 to 50.....	71	9.6	2,474	16.0
6 to 20.....	39	15.4	629	0.4	51 to 100.....	31	4.2	2,244	14.5
21 to 50.....	20	7.9	961	0.7	101 to 500.....	35	4.7	6,691	43.3
51 to 100.....	13	5.1	18,240	12.4	Over 1,000.....	1	0.1	1,512	9.8
101 to 500.....	63	24.8	21,904	14.8	<b>GRANITE</b> .....	358	100.0	8,049	100.0
501 to 1,000.....	38	13.0	105,110	71.3	No wage earners.....	20	5.6	.....	.....
Over 1,000.....	22	8.7	4,357	0.6	1 to 5.....	119	33.2	288	3.6
<b>BITUMINOUS</b> .....	6,636	100.0	645,798	100.0	6 to 20.....	117	32.7	1,173	14.6
No wage earners.....	62	0.9	19,074	3.3	21 to 50.....	60	16.8	1,862	23.1
1 to 5.....	1,512	22.8	41,009	7.5	51 to 100.....	28	7.8	2,035	25.3
6 to 20.....	1,540	23.3	64,355	11.8	101 to 500.....	14	3.9	2,691	33.4
21 to 50.....	1,238	18.7	250,288	47.5	<b>CLAY</b> .....	345	100.0	5,453	100.0
51 to 100.....	888	13.4	68,737	12.6	No wage earners.....	26	7.5	.....	.....
101 to 500.....	1,241	18.7	89,998	16.5	1 to 5.....	108	31.3	273	5.0
501 to 1,000.....	101	1.5	.....	.....	6 to 20.....	131	38.0	1,457	27.3
Over 1,000.....	45	0.7	.....	.....	21 to 50.....	57	16.5	1,824	33.4
<b>PETROLEUM AND NATURAL GAS</b> .....	9,814	100.0	93,205	100.0	51 to 100.....	19	5.5	1,270	23.3
No wage earners.....	3,292	33.5	8,852	9.5	101 to 500.....	4	1.2	599	11.0
1 to 5.....	4,925	50.2	11,036	11.8	<b>PHOSPHATE ROCK</b> .....	48	100.0	4,373	100.0
6 to 20.....	1,034	10.5	9,574	10.6	No wage earners.....	1	2.1	.....	.....
21 to 50.....	296	3.0	9,592	10.3	1 to 5.....	2	4.2	9	0.2
51 to 100.....	133	1.4	21,978	23.6	6 to 20.....	10	20.8	122	2.8
101 to 500.....	102	1.0	17,358	18.6	21 to 50.....	11	22.9	390	8.2
501 to 1,000.....	24	0.2	14,515	15.6	51 to 100.....	10	20.8	679	15.5
Over 1,000.....	8	0.1	.....	.....	101 to 500.....	14	29.2	3,203	73.2
<b>IRON ORE</b> .....	290	100.0	45,741	100.0	<b>SANDSTONE</b> .....	255	100.0	4,287	100.0
No wage earners.....	5	1.7	63	0.1	No wage earners.....	9	3.5	.....	.....
1 to 5.....	21	7.2	574	1.3	1 to 5.....	105	41.2	245	5.7
6 to 20.....	43	14.8	2,180	4.8	6 to 20.....	89	34.9	1,032	24.1
21 to 50.....	57	19.7	3,622	8.4	21 to 50.....	29	11.4	942	22.0
51 to 100.....	54	18.6	31,032	67.8	51 to 100.....	17	6.7	1,249	29.1
101 to 500.....	102	35.2	5,535	12.1	101 to 500.....	6	2.4	819	19.1
501 to 1,000.....	7	2.4	2,535	5.5	<b>SLATE</b> .....	101	100.0	3,513	100.0
Over 1,000.....	1	0.3	.....	.....	No wage earners.....	1	1.0	.....	.....
<b>COPPER</b> .....	195	100.0	43,717	100.0	1 to 5.....	9	8.9	32	0.9
No wage earners.....	16	8.2	129	0.3	6 to 20.....	32	31.7	355	10.1
1 to 5.....	53	27.2	406	0.9	21 to 50.....	39	38.6	1,291	36.7
6 to 20.....	35	17.9	859	2.0	51 to 100.....	14	13.9	1,005	28.6
21 to 50.....	27	13.8	835	1.9	101 to 500.....	6	5.9	830	23.6
51 to 100.....	11	5.6	8,678	19.8					
101 to 500.....	30	15.4	8,817	20.2					
501 to 1,000.....	12	6.2	23,995	54.9					
Over 1,000.....	11	5.6	.....	.....					

TABLE 15.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS: 1919—Continued.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Num-ber.	Per cent dis-tribution.	Average number.	Per cent dis-tribution.		Num-ber.	Per cent dis-tribution.	Average number.	Per cent dis-tribution.
<b>BASALT.....</b>	163	100.0	3,336	100.0	<b>GOLD, PLACER MINES.....</b>	112	100.0	1,380	100.0
No wage earners.....	2	1.2	.....	.....	No wage earners.....	34	30.4	.....	.....
1 to 5.....	36	22.1	115	3.4	1 to 5.....	47	42.0	112	8.1
6 to 20.....	67	41.1	782	23.4	6 to 20.....	17	15.2	214	15.5
21 to 50.....	47	28.8	1,502	45.0	21 to 50.....	8	7.1	250	18.1
51 to 100.....	6	3.7	390	11.7	51 to 100.....	4	3.6	233	18.3
101 to 500.....	5	3.1	547	16.4	101 to 500.....	2	1.8	551	39.9
<b>GYPSUM.....</b>	47	100.0	2,191	100.0	<b>SULPHUR.....</b>	4	100.0	1,129	100.0
1 to 5.....	4	8.5	11	0.5	6 to 20.....	1	25.0	14	1.2
6 to 20.....	14	29.8	190	8.7	101 to 500.....	2	50.0	500	44.3
21 to 50.....	15	31.9	508	23.1	501 to 1,000.....	1	25.0	615	54.5
51 to 100.....	8	17.0	518	23.6					
101 to 500.....	6	12.8	966	44.1					
<b>MARBLE.....</b>	48	100.0	1,732	100.0					
No wage earners.....	1	2.1	.....	.....					
1 to 5.....	4	8.3	12	0.7					
6 to 20.....	20	41.7	250	14.4					
21 to 50.....	16	33.3	531	30.7					
51 to 100.....	2	4.2	147	8.5					
101 to 500.....	5	10.4	792	45.7					

The very small enterprises, employing no wage earners or from 1 to 20 men each, were most numerous. Enterprises in these classes constituted nearly three-fourths of the total for the United States, but the wage earners employed were only 6.2 per cent of the total number of wage earners. In the mining and quarrying industries, exclusive of petroleum and natural gas, the very small enterprises constituted little more than half of the total number of enterprises and those enterprises having 1 to 20 wage earners employed 4.3 per cent of the average number of wage earners in these industries; whereas, in the petroleum and natural-gas industry the small enterprises constituted approximately 95 per cent of all enterprises, and the wage earners employed were 21.3 per cent of the total average number of wage earners in the industry. On the other hand, 76 per cent of the total average number of wage earners were employed by enterprises having more than 100 men although such enterprises constituted only 9.5 per cent of the total number of enterprises.

A relatively large number of small enterprises is characteristic of each of the mining industries, but the ratio of small enterprises to large enterprises varies in different industries. The percentage of small enterprises, that is, those having no wage earners or fewer than 101 each, ranged from 25 per cent in the sulphur-mining industry to 98.8 per cent in the clay industry. The industries in which very large enterprises, those employing more than 1,000 wage earners each, were relatively numerous were: Anthracite-coal mining in which 71.3 per cent of all wage earners were employed by 22 enterprises; copper mining in which 54.9 per cent were employed by 11 enterprises; lead and zinc mining in which 24.4 per cent were employed by 4 enterprises; and bituminous-coal mining in which 16.5 per cent of the total number

of wage earners were employed by 45 enterprises. In the petroleum and natural-gas industry the concentration of wage earners in large enterprises is not as marked as indicated in the table because the table is based on consolidated returns from large operators which combined data for several individual operations each of which was considerably smaller than the size shown for these larger enterprises in the table.

#### PERSONS ENGAGED IN MINING INDUSTRIES.

Persons according to occupational classes, sex, and age.—Table 16 shows the persons engaged in producing mining enterprises in the United States in various occupational classes and grouped according to sex, and also shows the number of wage earners over and under 16 years of age. For persons employed in clerical and supervisory capacities the numbers shown are for December 15 or the nearest representative day and for wage earners the number shown is the average number. The figures given for male and female wage earners and those under 16 years of age are estimated parts of the total average number of wage earners proportional to the numbers of females and persons under 16 years of age reported among the wage earners on December 15 or the nearest representative day.

TABLE 16.—PERSONS ENGAGED IN PRODUCING ENTERPRISES: 1919.

CLASS.	Total.	Male.	Female.
All classes.....	1,077,675	1,065,051	12,624
Proprietors and officials.....	60,409	58,330	2,079
Proprietors and firm members.....	21,918	20,231	1,687
Salaried officers of corporation.....	10,456	10,202	254
Superintendents and managers.....	21,704	21,648	56
Technical employees.....	6,331	6,249	82
Clerks and other subordinate salaried employees.....	35,706	25,649	10,057
Wage earners (average number).....	981,560	981,072	488
Wage earners 16 years of age and over.....	981,261	980,873	488
Wage earners under 16 years of age.....	199	199	.....

Women constituted only 1.2 per cent of the total number of persons in the industries. Approximately 80 per cent of them were employed as clerks or other subordinate salaried employees and a very few were reported as wage earners.

Of the whole number of persons engaged in producing enterprises, 2 per cent were proprietors and firm members, 1 per cent were salaried officers, 2 per cent were superintendents and managers, 3.3 per cent were clerks and other subordinate salaried employees, and 91.1 per cent were wage earners.

Table 17 shows for the 17 most important mining industries the principal classes of persons engaged in the producing enterprises and the per cent of the total in each group. The proportion of proprietors and officials is as a rule small and is less than 10 per cent in all industries except gold-placer mining and petroleum and natural-gas production. The proportion of clerks and other subordinate salaried employees is also small. The proportion of wage earners ranges from 74.5 per cent in the petroleum and natural-gas industry to 95.2 per cent in anthracite-coal mining. The proportion of wage earners employed in metal mining as a whole is somewhat smaller than the proportion in coal mining and slightly larger than the proportion in stone quarrying.

TABLE 17.—PERSONS ENGAGED IN PRODUCING ENTERPRISES, BY INDUSTRIES: 1919.

INDUSTRY.	Total.	Proprietors and officials.	Clerks and other subordinate salaried employees.	Wage earners (average number).	PER CENT OF TOTAL.		
					Proprietors and officials.	Clerks and other subordinate salaried employees.	Wage earners.
All industries.....	1,077,675	60,409	35,706	981,560	5.6	3.3	91.1
<b>Coal:</b>							
Anthracite.....	154,882	4,120	3,390	147,372	2.7	2.2	95.2
Bituminous.....	583,608	22,403	15,407	545,798	3.8	2.6	93.5
<b>Petroleum and natural gas.....</b>	<b>125,110</b>	<b>22,187</b>	<b>9,718</b>	<b>93,205</b>	<b>17.7</b>	<b>7.8</b>	<b>74.5</b>
Iron ore.....	48,767	1,286	1,740	45,741	2.6	3.6	93.8
Copper.....	46,999	1,601	1,681	43,717	3.4	3.6	93.0
Limestone.....	24,705	1,727	909	22,069	7.0	3.7	89.3
Lead and zinc.....	24,030	1,374	772	21,884	5.7	3.2	91.1
Gold and silver, lode mines.....	17,531	1,663	402	15,466	9.7	2.3	88.0
Granite.....	8,951	696	206	8,049	7.8	2.3	89.9
Clay.....	6,087	460	174	5,453	7.6	2.9	89.6
Sandstone.....	4,897	434	176	4,287	8.9	3.6	87.5
Phosphate rock.....	4,761	223	165	4,373	4.7	3.5	91.9
Slate.....	3,852	269	70	3,513	7.0	1.8	91.2
Basalt.....	3,791	310	145	3,336	8.2	3.8	88.0
Gypsum.....	2,477	108	188	2,191	4.2	7.4	88.5
Marble.....	1,891	96	68	1,732	5.1	3.3	91.6
Gold, placer mines.....	1,651	322	39	1,390	14.1	2.4	83.6
Sulphur.....	1,273	59	85	1,129	4.6	6.7	88.7

Proprietors performing manual labor.—Table 18 gives for 15 principal mining industries the number and percentage of proprietors and firm members who performed manual labor compared with the total number. It would appear from the fact that out of a total of 21,918 proprietors and firm members, 5,245, or nearly one-fourth, were personally performing manual labor in or about their enterprises in 1919, that

there was a considerable number of enterprises operated without the assistance of hired help or with little help. The industries in which proprietors performing manual labor were relatively most numerous include copper mining, gold, and silver lode-mining, and placer mining, in each of which industries more than half of the proprietors and firm members were working in their own mines; and bituminous-coal mining, lead and zinc mining, and granite quarrying in which nearly one-half of all proprietors belonged to this class. The petroleum and natural-gas industry reported the largest absolute number of proprietors and firm members performing manual labor, but these constituted a comparatively small percentage of the total number in that industry.

TABLE 18.—PROPRIETORS AND FIRM MEMBERS, PRODUCING ENTERPRISES: 1919.

INDUSTRY.	Total.	PERFORMING MANUAL LABOR.	
		Number.	Per cent.
All industries.....	21,918	5,245	23.9
<b>Coal:</b>			
Anthracite.....	159	34	21.4
Bituminous.....	4,237	1,830	43.2
Petroleum and natural gas.....	14,223	1,987	14.0
Iron ore.....	41	9	21.9
Copper.....	103	62	60.2
Lead and zinc.....	412	186	45.1
Gold and silver, lode mines.....	712	485	68.1
Limestone.....	633	175	27.6
Granite.....	328	145	44.2
Sandstone.....	179	53	29.6
Clay.....	187	48	25.7
Basalt.....	77	20	26.1
Gold, placer mines.....	122	77	63.1
Gypsum.....	4	3	75.0
Slate.....	64	21	32.8
Marble.....	7	3	42.9

Wage earners, by occupations.—Table 19 gives for all mining industries, and for the 17 most important industries separately, the number of wage earners in producing mines, classified by occupations, and segregates those who work above and below ground. This classification serves to distinguish those engaged in the more peculiarly mining occupations from another skilled class (including the groups "Enginemen, motormen, hoistmen, firemen, machinists, electricians, carpenters, and other mechanics"), on the one hand, and from the less skilled ("Muckers, loaders, laborers, and others not classified"), on the other hand.

Miners, quarrymen, cutters, and drillmen, including their helpers, constituted the most numerous class of wage earners in 1919, representing 39.2 per cent of the whole number employed in all industries combined. The percentage in this class in all industries, except in the petroleum and natural-gas industry in which they are not represented, was 43.2. The class of wage earners included under the heading "Muckers, loaders, laborers, and others not classified" was the next most numerous class, and the third was the class "Enginemen, hoistmen, electricians, mechanics, etc."



TABLE 19.—WAGE EARNERS, BY OCCUPATIONS, PRODUCING ENTERPRISES: 1919.

INDUSTRY.	NUMBER OF WAGE EARNERS DEC. 15TH OR NEAREST REPRESENTATIVE DAY.													
	All classes.			Foremen, shift bosses, etc.		Enginemen, motormen, holstmen, firemen, machinists, electricians, carpenters, and other mechanics.		Miners, cutters, quarrymen, and drillmen, including their helpers.		Timbermen, trackmen, and all men engaged in hauling, tramping, and caging.		Muckers, loaders, laborers, and others not classified.		In mills and beneficiating plants.
	Total.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.
All industries.....	1,088,189	382,766	705,423	10,314	15,437	134,117	30,145	30,702	395,398	25,583	138,491	135,239	125,952	46,811
Coal, total.....	789,646	155,364	614,282	5,082	12,020	43,123	26,775	7,168	334,485	17,503	118,805	59,437	104,197	23,051
Anthracite.....	152,243	46,618	105,625	435	1,098	10,488	4,331	138	59,401	2,769	17,325	12,291	23,470	20,497
Bituminous.....	617,403	108,746	508,657	4,647	10,922	32,635	22,444	7,025	295,084	14,733	90,480	47,152	80,727	2,554
Petroleum and natural gas..	100,980	100,980	.....	.....	.....	64,230	.....	.....	.....	.....	.....	36,750	.....	.....
Iron ore.....	47,740	19,050	28,690	789	878	6,526	1,053	1,354	15,326	1,677	5,495	7,436	5,938	1,268
Copper.....	45,809	20,105	25,704	807	1,137	6,167	1,254	1,185	9,455	1,005	8,115	4,352	5,743	6,599
Lead and zinc.....	26,168	9,471	16,697	369	573	2,576	362	109	6,857	304	4,361	1,477	4,544	4,636
Limestone.....	25,052	24,272	780	957	10	3,278	53	8,433	204	1,930	104	8,716	409	958
Gold and silver, lode mines..	17,323	5,830	11,492	313	485	1,713	615	208	4,980	296	2,202	1,339	3,310	1,961
Granite.....	9,166	9,166	.....	379	.....	858	.....	3,736	.....	544	.....	1,621	.....	2,028
Clay.....	6,302	4,547	1,755	174	57	349	25	815	1,066	426	400	2,527	207	256
Phosphate rock.....	5,913	5,764	149	291	3	1,154	.....	963	116	443	7	2,577	23	331
Sandstone.....	4,861	4,861	.....	197	.....	405	.....	1,599	.....	304	.....	1,621	.....	735
Slate.....	3,973	3,242	731	133	36	371	3	811	488	200	54	792	150	935
Basalt.....	3,799	3,799	.....	144	.....	473	.....	1,120	.....	192	.....	1,828	.....	42
Gypsum.....	2,556	1,381	1,175	37	40	105	40	159	445	25	208	239	442	816
Marble.....	1,856	1,856	.....	66	.....	150	.....	763	.....	41	.....	307	.....	529
Sulphur.....	1,622	1,615	7	43	.....	878	.....	.....	2	.....	.....	692	5	2
Gold, placer mines.....	1,534	1,459	75	106	4	463	.....	122	.....	37	4	729	7	2

<sup>1</sup> Includes well drillers and pumpers.

In all the mining industries combined approximately 35 per cent of the wage earners were employed above ground and 65 per cent below ground. Excluding the petroleum and natural-gas industry, which employs no mining labor and none below ground, and also excluding wage earners employed in mills and beneficiating plants, approximately 75 per cent of the remaining 940,398 wage earners employed in mining worked below ground. The proportion below ground was greatest (five-sixths) in bituminous-coal mining. For the combined stone industries 3.1 per cent of all wage earners engaged in quarrying operations were employed below ground. These were in the limestone and slate industries only, as the granite, sandstone, basalt, and marble enterprises reported in 1919 were exclusively surface operations.

**Persons not counted.**—In addition to the persons in supervisory capacities and to the wage earners regularly and directly employed in mining industries there were other persons employed who were not enumerated in the census of mines and quarries. These were the persons engaged in that part of the work which was done by contract and also the wage earners employed directly by the reporting enterprises but which employed them only occasionally or for part time. The number of wage earners employed by contractors and also the number of persons in supervisory capacities employed in connection with contract work could not be ascertained. First, because the reporting operators could not make accurate returns and were not required to attempt to make such returns for the contractors engaged by them, and second, because the contract work is commonly temporary and the same

men are from time to time shifted from one enterprise to another. This is particularly true of well drilling in the petroleum and natural-gas industry.

The relative importance of work done and hence of the number of persons engaged under contract as compared with the work performed by regular wage earners may be inferred from a comparison of the total amount paid out in wages with the total expenditure for contract work. The total amount paid by producing enterprises in 1919 for contract work was \$79,380,177, a large part of which was cost of labor, and should be compared with \$1,295,936,326 paid to wage earners employed directly.

Some small enterprises dispense with the services of regular wage earners by hiring occasional help or employ wage earners for part time only. The 1919 census includes 1,933 such enterprises in industries as follows:

Bituminous coal.....	33
Petroleum and natural gas.....	1,895
Iron ore.....	1
Gold and silver, lode mines.....	1
Lead and zinc.....	3

No wage earners have been counted for these enterprises, but the amounts paid by them in wages have been included in the tabulations.

**Wage earners, by months.**—Table 20 shows the number of wage earners reported for the 15th day of each month or the nearest representative day in producing enterprises in all mining industries combined and in the 17 leading industries separately. The table also shows the average number of wage earners, the months of minimum and maximum employment, and the ratio of the minimum to the maximum number.

SUMMARY OF RESULTS.

TABLE 20.—WAGE EARNERS, BY MONTHS, FOR LEADING INDUSTRIES, PRODUCING ENTERPRISES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	981,560	1,025,871	985,369	960,499	952,305	958,506	965,230	1,005,219	1,081,628	1,043,719	1,061,204	758,156	1,032,014	72.1
Coal:														
Anthracite.....	147,372	146,241	145,985	143,437	<i>142,691</i>	144,925	145,010	148,397	149,220	149,522	150,847	150,504	<b>151,595</b>	94.1
Bituminous.....	545,798	589,864	561,861	550,126	552,682	535,110	541,647	566,897	583,120	563,304	<b>599,560</b>	308,298	587,149	51.4
Petroleum and natural gas.....	93,205	85,225	<i>85,119</i>	87,130	88,120	90,015	91,156	94,389	98,570	99,570	99,332	99,541	<b>100,393</b>	84.9
Iron ore.....	45,741	47,493	47,205	46,712	44,822	45,631	44,625	46,286	46,754	46,911	45,772	44,126	<i>43,555</i>	80.6
Copper.....	43,717	53,925	49,136	43,701	40,675	33,374	37,885	39,919	41,386	42,565	44,395	45,246	43,267	65.3
Limestone.....	22,069	18,085	<i>17,398</i>	18,847	21,476	22,992	23,667	24,599	25,655	25,303	23,901	22,538	20,367	67.8
Lead and zinc.....	21,884	25,124	23,434	22,574	21,506	20,196	<i>19,949</i>	20,207	21,050	21,162	21,579	22,631	23,196	79.4
Gold and silver, lode mines.....	15,436	<i>14,778</i>	14,915	15,095	14,921	15,184	15,540	16,319	16,469	15,349	15,536	15,456	15,670	89.7
Granite.....	8,049	<i>8,689</i>	8,844	8,504	7,771	8,620	8,945	9,071	<i>9,223</i>	9,024	9,101	8,741	8,070	61.4
Clay.....	5,453	4,849	<i>4,681</i>	4,851	5,373	5,522	5,582	5,771	5,883	<b>6,080</b>	5,853	5,538	5,513	77.8
Phosphate rock.....	4,373	4,583	4,865	4,741	4,972	3,269	<i>3,308</i>	3,419	3,873	4,094	4,639	5,358	5,771	50.3
Sandstone.....	4,287	3,471	<i>3,305</i>	3,681	4,128	4,411	4,533	4,067	4,961	4,916	4,726	4,598	4,047	66.6
Slate.....	3,513	<i>3,852</i>	2,909	3,060	3,415	3,580	3,764	3,858	3,572	3,594	3,729	3,896	3,127	72.6
Basalt.....	3,336	<i>3,057</i>	<i>3,057</i>	2,456	3,257	3,680	3,823	3,985	4,097	3,906	3,908	3,710	3,131	49.7
Gypsum.....	2,191	<i>1,674</i>	1,649	1,782	1,918	2,078	2,092	2,350	2,327	2,582	2,713	<b>2,715</b>	2,512	58.0
Marble.....	1,732	<i>1,459</i>	1,497	1,641	1,688	1,778	1,826	1,833	1,865	1,810	1,675	1,759	1,753	77.8
Gold, placer mines.....	1,380	<i>1,274</i>	1,312	<i>1,274</i>	1,317	1,424	1,420	1,499	1,430	1,404	1,425	1,433	1,348	85.0
Sulphur.....	1,129	<i>1,492</i>	1,390	1,406	1,845	1,503	814	832	845	883	932	973	933	52.7

For all industries combined the largest number of wage earners, 1,051,204, was reported for October and the smallest number, 758,156, or 72.1 per cent of the maximum, for November. It should be noted that these are the months of minimum and maximum in 1919 for the bituminous-coal mining industry which dominates all mining industries in the United States. (Bituminous-coal mining reported 55.6 per cent of the total average number of wage earners, 57 per cent of the maximum, and 40.7 per cent of the minimum number for all industries). The months of minimum and maximum employment in bituminous-coal mining, and therefore for the combined mining industries in the United States, were unusual on account of the great coal strike. Normally a winter month has been the month of maximum employment and a spring month the month of minimum employment in the bituminous-coal mining industry. Anthracite mining shows greater regularity of employment and the year 1919 was normal in this industry. For the copper, iron ore, and lead and zinc industries the table reflects depressed conditions following a period of heavy employment at the beginning of the year which marked the final stage of the war boom in these industries. For most of the remaining industries the month of maximum employment was, as would appear to be normal, in the summer or fall of the year. The gypsum, phosphate-rock, and slate industries, however, show maxima in November and December, because these industries began toward the close of the year to recover from depressed conditions—in the gypsum and slate industries caused by the war restrictions on the consumption of structural material, and in the phosphate-rock industry caused largely by labor difficulties.

Prevailing hours of labor.—In Table 21 the producing enterprises in the leading mining industries are classified according to the prevailing hours of labor per week and the number of wage earners in each group are shown. The wage earners of each enterprise are classed as a whole regardless of the fact that some worked more or fewer hours than those prevailing for the majority. For all industries combined, in a majority of enterprises employing wage earners and for nearly three-fourths of the wage earners, the prevailing hours of labor were 44 to 53 per week and for the most part the 8-hour day and 6-day week prevailed. In nearly one-third of the enterprises but for less than one-fifth of the wage earners the prevailing hours were 54 to 62 per week, which for the most part meant the 10-hour day and 6-day week. In the coal-mining industry the 44 to 53 hour week was the rule, although a considerable number of bituminous-coal enterprises employing relatively few wage earners worked shorter hours and certain classes of small anthracite enterprises worked longer hours. In the petroleum and natural-gas industry longer hours were the rule. Nearly half the wage earners worked from 54 to 62 hours per week and more than one-third had longer hours. In the metal-mining industries hours ranging from 44 to 53 and from 54 to 62 per week were most commonly reported. In some parts of the country in these industries the 8-hour day and 6-day week prevailed and in others the 10-hour day and 6-day week was the rule. In the quarrying industries as a whole the prevailing hours of labor were from 54 to 62 per week and the 10-hour day and 6-day week was the most commonly reported, but the granite-quarrying industry was an exception to this rule in that a majority of enterprises and wage earners had shorter hours.

TABLE 21.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR LEADING INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
			35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	17,558	981,560	1,166	17,755	732	19,856	8,962	721,809	5,262	182,126	768	26,841	768	13,063
Coal:														
Anthracite.....	262	147,372			1	315	176	145,787	71	807	3	442	1	21
Bituminous.....	6,574	545,798	257	15,978	425	17,163	5,546	485,574	331	25,222	12	1,841	3	20
Petroleum and natural gas.....	6,522	98,206	852	1,295	225	327	1,623	13,227	2,356	44,068	714	21,726	752	12,562
Iron ore.....	285	45,741	1	11	4	210	151	20,311	124	24,637	5	563		
Copper.....	179	43,717			2	7	79	21,150	97	21,166	1	1,394		
Limestone.....	870	22,069	3	57	8	24	187	3,774	663	17,934	9	280		
Lead and zinc.....	391	21,884	1	115			255	15,062	133	6,684			2	3
Gold and silver, lode mines.....	589	15,436			2	3	192	3,595	399	11,586	4	251	1	1
Granite.....	338	8,049	4	43	32	1,195	209	4,829	91	1,948	2	34		
Clay.....	319	5,453	8	27	6	33	142	2,351	161	3,033	1	4	1	5
Phosphate rock.....	47	4,373	1	5	1	30	6	309	36	3,683			3	346
Sandstone.....	246	4,287			3	8	49	493	191	3,688	3	108		
Slate.....	100	3,513			11	335	14	963	73	2,170	2	45		
Basalt.....	161	3,336	1	20	1	3	49	728	110	2,585				
Gypsum.....	47	2,191			1	1	12	830	32	1,317	2	43		
Marble.....	47	1,732					3	50	43	1,667	1	15		
Gold, placer mines.....	78	1,380					17	62	52	1,243	8	72	1	3
Sulphur.....	4	1,129							4	1,129				
All other.....	509	10,895	38	204	10	193	152	2,794	304	7,559	1	23	4	123

<sup>1</sup> Exclusive of 3,722 enterprises employing no wage earners in industries as follows: Abrasive materials, 5; asphalt, 2; barytes, 1; basalt, 2; clay, 26; chromite, 5; coal, anthracite, 2; coal, bituminous, 62; copper, 18; feldspar, 2; fluorspar, 4; granite, 20; gold and silver, lode mines, 151; gold, placer mines, 34; iron ore, 5; lead and zinc, 41; limestone, 25; magnesite, 1; marble, 1; mica, 6; millstones, 5; mineral pigments, 2; petroleum and natural gas, 3,392; phosphate rock, 1; sandstone, 9; slate, 1; talc and soapstone, 1.

## LAND TENURE.

Table 22 gives for all mining industries combined, and for the 17 leading industries separately, statistics relating to the acreage of land controlled, distinguishes the character of land and also the form of tenure of mineral land, and shows the acreage of mineral land operated.

The amount of difference between the total mineral land operated and the mineral land controlled is the acreage held under lease by some enterprises and which is also reported controlled by others who were the owners or prior lessees. This duplication does not appear in the amounts reported as mineral land operated. The aggregate of all land controlled by producing enterprises was 24,757,840 acres. The greater part of this land was mineral land, but over 2,000,000 acres, or more than one-twelfth of the total, were reported as "timber and other lands" which comprised lands held as sources of timber used in mining and land held for building sites, water resources, for tunnel and drainage purposes, and for other uses. Such lands are, however, particularly in the coal and iron-ore and copper-mining industries which reported most of the acreage of timber and other lands, held for their prospective value as mineral land. Not all of the area of mineral land reported was in actual use, for, although pertaining to mining operations reported, many large tracts included in the returns embraced extensive acreage held in reserve.

Nearly half of the total acreage controlled by mining enterprises in 1919 and more than half of the mineral

land operated was reported by the petroleum and natural-gas industry. By far the largest part (more than three-fourths) of the remainder was reported by the coal industry. The holdings of land by the iron-ore and the copper-mining industries were also very large, and for these industries as well as for the coal industry the holdings of reserve land reported under the description of "timber and other lands" were extensive.

TABLE 22.—LAND OPERATED AND CONTROLLED, PRODUCING ENTERPRISES: 1919.

	Mineral land operated.	LAND CONTROLLED (ACRES).				
		Total.	Mineral land.			Timber and other lands.
			By ownership.	By lease.	Per cent owned.	
All industries.....	22,474,069	24,757,840	3,568,590	13,980,731	38.0	2,208,519
Coal:						
Anthracite.....	261,355	432,055	194,300	77,955	71.4	159,710
Bituminous.....	8,261,372	9,073,688	5,793,651	2,528,562	69.6	751,473
Petroleum and natural gas.....	12,171,388	12,171,388	1,172,068	10,999,320	9.6	
Iron ore.....	241,508	938,716	177,290	65,280	73.1	696,140
Copper.....	392,811	648,703	378,839	14,045	96.4	255,819
Lead and zinc.....	135,262	182,509	99,338	36,118	73.3	47,053
Gold and silver, lode mines.....	142,573	188,937	113,347	29,424	79.4	46,166
Limestone.....	122,820	175,980	84,717	38,306	68.9	52,958
Granite.....	30,659	37,747	23,799	6,950	77.4	6,998
Sulphur.....	12,946	20,511	12,946			7,565
Sandstone.....	48,729	56,802	34,726	15,455	69.2	6,641
Phosphate rock.....	160,447	241,810	156,418	4,029	97.5	81,363
Clay.....	105,706	112,901	70,498	35,263	68.7	7,040
Basalt.....	15,625	17,514	7,139	8,486	45.7	1,889
Gold, placer mines.....	62,857	79,817	51,219	11,738	81.4	16,860
Gypsum.....	41,703	42,193	36,581	5,122	87.7	490
Slate.....	5,440	8,245	5,673	1,767	67.5	2,805
Marble.....	28,969	38,250	11,818	17,159	40.8	6,273

Of the total amount of land controlled by producing enterprises 38 per cent was owned by the operators themselves and the remainder was held under lease. The petroleum and natural-gas industry, which reported most of the land as held under lease, presents a marked contrast to all the other industries shown in this table. Considering only the mineral land controlled in mining and quarrying, about 70 per cent was owned by the operators. In the coal industry this proportion was also about 70 per cent. In the other industries it ranged from 40.8 per cent in the marble industry and 45.7 per cent in the basalt industry to 96.4 per cent in the copper-mining industry and 97.5 per cent in the phosphate-rock industry.

POWER.

Table 23 shows for all mining industries combined, and for the leading mining industries separately, the number and horsepower of prime movers of various kinds and the number and horsepower of electric motors used. The table shows separately the number and horsepower of motors operated by purchased current and of those run by current generated by the enterprises reporting them. Five million horsepower, or 76 per cent of the aggregate horsepower used in mining, was furnished by prime movers and 1,600,000

horsepower, or 24 per cent, was furnished by electric motors operated by purchased current. A relatively negligible amount was obtained from power equipment of other kind operated by purchased power. As shown by the number and horsepower of electric motors run by the current generated by the enterprises reporting them, a considerable part of the horsepower of the prime movers was used indirectly through electric current generated in the enterprises reporting them. Of the total horsepower of prime movers more than three-fifths was in steam engines (not turbines) and nearly one-fourth was in internal-combustion engines. Steam turbines furnished a relatively small part of the power—chiefly for bituminous-coal mines and copper mines. Water power was used to only a small extent. Nearly all of the great number of internal-combustion engines were used in the petroleum and natural-gas industry.

The coal-mining industry reported 45.4 per cent of the aggregate horsepower used; the petroleum and natural-gas industry, 27.1 per cent; the copper industry, 7.8 per cent; the iron-ore mining industry, 5.5 per cent; the lead and zinc industry, 3.4 per cent; the limestone industry, 3.2 per cent; and the gold and silver-lode-mining industry, 2.2 per cent. The proportion used in other industries was small.

TABLE 23.—POWER USED, PRODUCING ENTERPRISES: 1919.

INDUSTRY.	Aggregate horsepower.	PRIME MOVERS.								EQUIPMENT OPERATED BY PURCHASED POWER.			ELECTRIC MOTORS RUN BY CURRENT GENERATED BY THE ENTERPRISE REPORTING.		
		Total horsepower.	Steam engines (not turbines).		Steam turbines.		Internal-combustion engines.		Water wheels and turbines.		Electric motors.		Other.	Number.	Horsepower.
			Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.			
All industries.....	6,723,791	5,111,531	46,433	3,238,288	553	473,985	56,988	1,361,146	287	38,112	40,500	1,603,390	8,865	32,980	1,258,795
<b>Coal:</b>															
Anthracite.....	899,783	782,090	5,298	730,141	45	50,665	73	1,284	.....	.....	1,881	117,668	.....	8,801	185,723
Bituminous.....	2,155,412	1,383,934	9,177	1,166,862	313	195,779	1,246	21,219	9	74	21,185	771,131	347	21,044	707,341
Petroleum and natural gas.....	1,821,342	1,770,181	23,412	532,734	.....	.....	53,699	1,237,407	2	40	1,841	44,638	6,523	1,329	28,164
Iron ore.....	370,869	273,477	2,333	231,184	25	28,521	45	5,397	22	8,375	1,341	97,882	10	1,112	67,595
<b>Copper</b> .....	523,591	396,458	842	245,398	79	123,223	129	16,327	10	1,510	3,647	135,968	1,165	3,252	161,024
Lead and zinc.....	229,541	117,527	411	42,821	21	35,420	433	35,415	30	3,871	2,389	111,574	140	625	22,834
Gold and silver, lode mines.....	149,680	50,487	182	20,133	4	4,750	370	11,149	135	14,405	2,523	98,668	580	494	18,892
Limestone.....	213,717	126,887	1,776	108,778	17	10,701	252	5,043	9	865	2,046	87,830	.....	287	11,421
Granite.....	55,674	34,711	744	30,231	3	2,360	84	1,343	4	777	450	20,908	60	34	1,520
<b>Sulphur</b> .....	15,291	15,291	544	11,581	23	3,320	13	390	.....	.....	.....	.....	.....	50	1,284
Sandstone.....	33,869	21,197	340	19,081	.....	.....	71	2,116	.....	.....	386	12,672	.....	155	4,686
Phosphate rock.....	49,639	46,976	100	17,140	17	17,751	44	12,085	.....	.....	38	2,663	.....	320	33,107
Clay.....	21,243	16,932	263	15,633	1	100	105	1,179	.....	.....	181	4,271	40	86	1,815
Basalt.....	37,307	22,844	289	21,099	3	1,225	30	520	.....	.....	255	14,463	.....	11	1,049
<b>Gold, placer mines</b> .....	35,632	3,406	2	40	.....	.....	16	719	25	2,647	624	32,226	.....	22	601
Gypsum.....	15,032	7,038	47	6,132	.....	.....	9	572	3	334	290	7,994	.....	103	1,417
Slate.....	20,613	8,778	193	8,669	.....	.....	1	8	2	101	426	11,835	.....	4	44
Marble.....	15,628	6,021	85	5,619	.....	.....	2	15	3	387	408	9,007	.....	19	480

## FUEL USED.

Table 24 shows for all mining industries combined, and for the leading industries separately, the quanti-

ties of the various kinds of fuel used. In order of importance as measured by the aggregate consumption in all industries the fuels were: Bituminous coal, anthracite, natural gas, and fuel oils.

TABLE 24.—FUEL USED, BY PRODUCING ENTERPRISES: 1919.

INDUSTRY.	COAL.		Coke (tons, 2,000 pounds).	Wood (cords).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Natural gas (1,000 cubic feet).
	Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).					
All industries.....	8,697,365	16,275,751	53,795	113,850	9,537,443	143,563	<sup>1</sup> 102,784,812
Coal:							
Anthracite.....	8,548,201	4,096			671	1,381	
Bituminous.....		11,124,904	14,254	594	3,235	18,963	865,907
Petroleum and natural gas.....		67,216		2,852	5,898,610	45,654	99,967,358
Iron ore.....	69,753	1,499,612	24,070	912	3,807	3,550	<sup>1</sup> 89,354
Copper.....	14,889	1,364,172	9,744	5,236	1,322,100	6,932	33,456
Lead and zinc.....	33,526	503,278	272	3,570	72,517	6,261	1,390,098
Gold and silver, lode mines.....	45	191,526	369	17,755	130,269	15,821	
Limestone.....	5,409	673,989	937	4,765	33,221	11,397	5,887
Granite.....	1,723	115,250	55	4,297	13,164	2,411	
Sulphur.....		308	20		1,067,736	740	
Sandstone.....	2,418	128,532	1,530	160	8,621	1,423	145,943
Phosphate rock.....	28	121,273	146	39,961	657,284	10,871	
Clay.....	345	84,065		1,424	51,646	1,819	9,009
Basalt.....	2,099	84,566		2,129	15,390	620	
Gold, placer mines.....	72	992	1	1,691	114	491	
Gypsum.....		76,096	1,534	43	62,893	1,752	
Slate.....	8,762	34,053		214	36	1	
Marble.....	210	31,158		323		170	
All other.....	9,885	170,375	863	27,924	176,129	13,336	277,900

<sup>1</sup> 89,354 M cubic feet reported for the iron-ore industry was manufactured gas.

ENTERPRISES OPERATED BY GOVERNMENTAL INSTITUTIONS.<sup>1</sup>

Reports were obtained by the 1919 census of mines and quarries from 145 governmental institutions, including Federal, state, county, and municipal organizations, and from 1 other noncommercial mining enterprise. Enterprises operated by governmental institutions differ in their organization and methods of management from commercial enterprises. Statistics relating to them were therefore omitted from the general tabulation and are presented as a separate group. Table 25 presents the principal statistics for these enterprises grouped according to the character of labor employed. Eleven were operated by penal institutions and used convict labor, and the remainder were operated with hired labor. The statistics for all enterprises in these classes do not include, under persons engaged, the convicts whose services were utilized in the operations of the enterprise, nor other persons whose services were partly given to the mining operations in question but were chiefly engaged by other activities of the operating institution. They do include, however, salaried employees engaged in supervisory work and the guards or other prison officials who were employed in guarding the prisoners while at work. The total value of the products reported

<sup>1</sup> Includes, to avoid disclosure of the individual operation, one other form of noncommercial enterprise.

by the penal institutions was \$479,165, which represented 17.5 per cent of the total product reported by the entire number of enterprises operated by governmental agencies.

In Table 26 the principal statistics for enterprises operated by governmental institutions are given for all industries in the United States combined and by industries and by states separately. Nine of the enterprises included in this group operated coal mines and mined nearly 175,000 short tons of coal valued at \$469,745; 15, which were municipal enterprises, operated natural-gas wells; and the remainder, which included most of the enterprises, were stone quarries operated largely by state and county authorities in connection with road building and some in connection with Federal engineering projects.

The most important enterprises in this group were in the states of Tennessee, California, Pennsylvania, and Oregon. The total value of products reported from these four states represented more than half of the total value of products of all governmental institutions reported. In Tennessee the principal enterprise was a coal mine operated by the state penitentiary. In California and Pennsylvania the principal enterprises were stone quarries for road work under state control, and in Oregon, stone quarries for river and harbor work by the Federal Government.

## SUMMARY OF RESULTS.

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**TABLE 25.—DETAILED STATISTICS FOR ENTERPRISES OPERATED BY GOVERNMENTAL INSTITUTIONS<sup>1</sup>: 1919.**

	Total.	Penal: Operated by convict labor.	All other: Operated by hired labor.		Total.	Penal: Operated by convict labor.	All other: Operated by hired labor.
Number of enterprises.....	146	11	135	Persons engaged—Continued. Number of wage earners employed on the 15th day of each month:			
Number of mines and quarries.....	180	11	169		January.....	733	168
Number of wells.....	68		68	February.....	740	168	572
Capital.....	\$1,998,165	\$354,500	\$1,643,665	March.....	878	172	703
Principal expenses—				April.....	1,085	185	900
Salaries.....	\$121,375	\$27,150	\$94,225	May.....	1,295	185	1,110
Wages.....	\$1,004,583	\$181,984	\$822,599	June.....	1,376	186	1,190
Supplies and materials.....	\$458,076	\$107,581	\$350,545	July.....	1,315	184	1,131
Fuel.....	\$85,695	\$26,602	\$59,193	August.....	1,376	186	1,190
Purchased power.....	\$19,619	\$5,636	\$13,983	September.....	1,236	185	1,051
Royalties and rents.....	\$57,530	\$1,500	\$56,030	October.....	1,111	185	926
Contract work.....	\$387,479	\$41,107	\$346,372	November.....	991	184	807
Value of products.....	\$2,741,285	\$479,165	\$2,262,120	December.....	851	184	667
Persons engaged—				Power used (aggregate horsepower).....	7,690	2,282	5,408
Superintendents and managers.....	78	10	68	Prime movers:			
Technical employees.....	7	2	5	Steam engines—			
Clerks and other subordinate salaried employees.....	27	5	22	Number.....	138	8	127
Wage earners (average number).....	1,082	181	901	Horsepower.....	4,278	1,460	2,818
Wage earners, December 15 or nearest representative day:				Internal-combustion engines—			
Above ground.....	1,685	179	1,506	Number.....	47	3	44
Below ground.....	110	6	104	Horsepower.....	776	42	734
Wage earners by occupations:				Equipment operated by purchased power:			
Foremen, etc.....	175	112	63	Electric motors—			
Engineers, firemen, hoistmen, electricians, mechanics, etc.....	98	9	89	Number.....	91	21	70
Miners, quarrymen, drillmen, including their helpers.....	702	24	678	Horsepower.....	2,636	790	1,856
Timbermen, trackmen, trammers, etc.....	71	1	70	Electric motors operated by current generated by the enterprise reporting—			
All others not classified.....	749	39	710	Number.....	8	5	3
Females included in above.....	9	3	6	Horsepower.....	340	270	70
				Lands controlled (acres)—			
				Mineral lands operated.....	9,949	1,323	8,626
				Owned.....	6,290	1,313	4,977
				Leased.....	3,659	10	3,649
				Timber and other lands.....	95	88	7

<sup>1</sup> Includes 1 noncommercial enterprise not governmental.

**TABLE 26.—PRINCIPAL STATISTICS BY INDUSTRIES AND STATES, FOR ENTERPRISES OPERATED BY GOVERNMENTAL INSTITUTIONS<sup>1</sup>: 1919.**

	Number of enterprises.	Number of mines and quarries.	Number of wells.	PERSONS ENGAGED.		Power used (aggregate horsepower).	Capital.	PRINCIPAL EXPENSES.						Value of products.	
				Salaried employees.	Wage earners (average number).			Salaries.	Wages.	Contract work.	Supplies and materials.	Fuel.	Purchased power.		Royalties and rents.
United States, all industries.....	146	180	68	112	1,082	7,690	\$1,998,165	\$121,375	\$1,004,583	\$387,479	\$458,076	\$85,695	\$19,619	\$57,530	\$2,741,285
<b>INDUSTRIES.</b>															
Coal, bituminous.....	9	9	.....	10	135	1,030	142,628	14,241	123,718	7,961	83,780	13,731	.....	2,401	469,745
Natural gas.....	15	.....	68	14	11	355	352,664	18,529	26,135	32,373	157,562	5,412	.....	17,409	335,900
Basalt (traprock).....	35	63	.....	22	194	2,142	350,476	15,706	230,255	118,966	40,995	21,476	4,135	2,898	451,477
Granite.....	14	14	.....	11	153	955	564,024	13,605	167,706	6,585	80,396	12,742	4,673	15,306	461,494
Sandstone.....	7	7	.....	5	30	185	40,975	880	30,094	.....	9,221	700	.....	52	44,346
Limestone.....	66	87	.....	50	559	3,023	547,398	58,412	424,675	221,564	86,222	31,634	10,811	19,462	978,323
<b>STATES.</b>															
California.....	11	11	.....	9	114	748	501,251	10,659	120,737	5,000	66,128	8,892	4,259	16,314	382,165
Kentucky.....	15	17	.....	11	163	616	180,267	11,365	114,519	9,129	13,567	5,568	3,100	2,400	220,241
Massachusetts.....	5	5	.....	1	45	315	37,225	966	48,967	.....	6,034	4,181	1,688	.....	70,184
Minnesota.....	4	4	.....	4	10	397	95,700	3,637	9,261	2,085	3,445	474	1,798	2	40,792
Missouri.....	9	9	.....	2	120	175	1,500	2,691	78,071	19,568	12,101	5,780	.....	1,929	95,373
New York.....	6	5	2	6	69	569	124,114	9,263	48,853	.....	19,760	2,166	2,159	180	134,147
Ohio.....	7	2	23	13	13	155	146,044	16,800	30,400	26,323	136,203	5,350	.....	12,225	225,366
Oregon.....	22	50	.....	13	118	1,129	222,741	6,710	158,528	83,018	23,662	10,094	2,443	3,090	301,633
Pennsylvania.....	20	35	18	8	74	830	120,673	4,186	75,212	155,839	15,475	9,753	260	11,175	304,600
South Dakota.....	4	1	4	2	4	25	64,000	625	4,128	.....	932	.....	500	.....	18,656
Tennessee.....	5	5	.....	12	109	1,070	118,000	24,381	85,039	38,961	77,203	14,201	1,340	642	453,488
Virginia.....	5	5	.....	4	45	141	13,200	2,560	19,696	.....	1,179	664	300	2,526	75,779
West Virginia.....	3	3	.....	3	26	193	50,550	4,500	17,824	.....	4,212	2,194	.....	815	33,520
Wisconsin.....	11	11	.....	14	40	209	54,400	9,777	38,727	743	8,689	3,544	619	1,076	63,394
All other states <sup>2</sup> .....	19	17	21	10	132	1,118	268,500	13,255	154,621	46,813	69,486	12,844	1,153	5,186	321,958

<sup>1</sup> Includes 1 noncommercial enterprise not governmental.

<sup>2</sup> Includes enterprises in states as follows: Alabama, 1; Arizona, 1; Arkansas, 1; Colorado, 1; Idaho, 1; Indiana, 1; Kansas, 2; Mississippi, 1; New Jersey, 2; New Mexico, 1; North Dakota, 1; Oklahoma, 1; Rhode Island, 2; Vermont, 1; and Washington, 2.

# GENERAL TABLES.

TABLE 1.—COMPARATIVE SUMMARY FOR THE UNITED STATES, BY INDUSTRIES, PRODUCING ENTERPRISES:  
1919 AND 1909.

INDUSTRY AND CENSUS YEAR.	Number of enterprises. <sup>1</sup>	Number of mines, quarries, or wells.	Wage earners (average number).	Power used (aggregate horsepower).	PRINCIPAL EXPENSES.					Value of products.
					Salaries and wages.	Supplies and materials.	Cost of fuel and purchased power.	Royalties and rents.	Contract work.	
<b>All industries:<sup>2</sup></b>										
1919.....	21,290		981,590	6,723,786	\$1,445,265,211	\$555,499,023	\$122,106,930	\$175,232,934	\$79,320,177	\$3,158,463,966
1909.....	19,915		967,633	4,606,263	1,046,167,630	308,729,754	45,134,540	63,973,536	23,837,896	1,233,419,323
Per cent of increase.....			1.4	45.9	136.8	174.0	170.5	174.0	174.8	155.0
<b>FUELS:</b>										
<b>Coal—</b>										
Anthracite—										
1919.....	254	534	147,372	890,783	223,284,942	60,171,994	13,305,952	11,766,598	1,557,845	364,084,142
1909.....	192	423	169,367	676,753	96,900,963	23,504,740	3,193,226	7,980,739	1,701,514	149,180,471
Per cent of increase.....			-13.0	33.0	130.4	156.0	316.7	47.4	-8.4	144.1
Bituminous—										
1919.....	6,636	8,282	545,798	2,155,412	751,270,106	142,432,551	37,177,169	22,295,056	2,855,986	1,145,977,555
1909.....	3,503	6,013	511,723	1,227,401	315,997,383	40,498,700	7,509,947	12,082,488	2,209,672	427,962,464
Per cent of increase.....			6.7	75.6	137.7	251.7	395.0	84.5	29.2	167.8
Petroleum and natural gas—										
1919.....	9,814	257,673	93,205	1,821,342	167,989,615	223,872,364	20,794,076	108,458,518	68,663,659	631,793,423
1909.....	7,793	166,320	36,744	1,221,969	34,333,531	49,835,890	1,444,595	21,282,820	16,736,510	185,416,684
Per cent of increase.....			153.7	49.0	389.3	349.2	1,339.4	400.2	310.3	402.5
<b>METALS:</b>										
<b>Iron ore—</b>										
1919.....	290	406	45,741	370,869	82,650,119	27,187,832	10,294,589	24,944,936	1,671,783	218,217,905
1909.....	176	483	47,246	346,534	38,121,418	12,697,428	4,632,299	15,174,735	2,068,842	106,947,082
Per cent of increase.....			-3.2	7.0	149.5	116.8	122.2	64.4	-38.1	104.0
<b>Copper—</b>										
1919.....	195	226	43,717	523,591	74,429,935	35,803,425	14,866,015	536,819	421,783	181,258,067
1909.....	161	368	51,643	376,464	53,097,007	34,315,337	13,324,157	1,799,656	644,562	134,616,987
Per cent of increase.....			-15.3	39.1	40.2	4.3	11.6	-70.0	-34.6	34.6
<b>Gold and silver, lode mines—</b>										
1919.....	740	799	15,436	149,680	26,823,418	17,709,183	3,969,260	1,015,719	1,237,043	58,832,330
1909.....	1,604	2,845	29,428	200,966	34,665,751	20,552,244	5,106,253	1,163,985	3,603,984	83,885,928
Per cent of increase.....			-47.5	-25.5	-22.6	-13.8	-22.4	-12.7	-65.7	-29.9
<b>Gold, placer mines—</b>										
1919.....	112	132	1,380	35,632	2,350,895	2,244,723	1,144,333	85,899	122,807	9,368,561
1909.....	673	890	3,084	27,278	3,100,347	2,194,444	675,602	141,716	99,582	10,237,252
Per cent of increase.....			-55.3	30.6	-24.2	2.3	68.4	-39.4	33.4	-8.5
<b>Lead and zinc—</b>										
1919.....	432	473	21,884	229,541	34,543,269	15,717,599	5,375,155	5,258,387	863,471	75,579,247
1909.....	977	1,142	16,807	110,569	11,570,223	6,783,070	2,400,724	2,301,880	197,259	31,363,094
Per cent of increase.....			30.2	107.6	198.6	131.7	123.9	128.4	357.7	141.0
<b>Manganese—</b>										
1919.....	35	37	909	5,800	1,220,003	447,833	98,335	188,067	140,237	2,188,312
1909.....			60	215	20,425	4,741	854	2,152		31,216
Per cent of increase.....			1,415.0	2,597.7	5,873.1	9,346.0	11,414.6	8,407.8		6,910.2
<b>Quicksilver—</b>										
1919.....	26	26	748	2,607	1,048,929	403,269	157,064	45,194	7,973	1,803,484
1909.....	12	12	784	784	486,128	180,847	54,531	5,268	9,878	868,458
Per cent of increase.....			37.5	232.5	115.8	208.2	188.0	757.9	-19.3	107.7
<b>Rare metals—</b>										
1919.....	22	22	633	3,544	909,980	580,640	86,908	45,896	7,878	1,725,642
1909.....	26	132	531	8,237	485,151	153,269	126,325	1,375	41,476	968,238
Per cent of increase.....			19.2	9.5	87.6	278.8	-31.2	3,201.5	-81.0	78.2
<b>STONE:</b>										
<b>Limestone—</b>										
1919.....	895	925	22,069	213,717	27,652,925	10,968,220	4,176,390	667,751	665,557	52,943,924
1909.....	1,665	1,916	30,289	126,024	16,806,181	3,754,125	1,507,028	488,919	201,880	29,832,492
Per cent of increase.....			-27.1	70.9	63.8	192.2	177.0	36.6	229.7	77.5
<b>Granite—</b>										
1919.....	358	381	8,049	55,674	9,784,115	2,593,040	1,094,821	139,202	118,637	18,279,345
1909.....	707	826	18,744	61,095	12,181,727	1,921,912	757,078	194,349	65,744	18,997,976
Per cent of increase.....			-57.1	-8.9	-19.7	34.9	44.6	-28.4	80.5	-3.8
<b>Sandstone—</b>										
1919.....	255	276	4,287	33,899	5,279,444	1,664,432	848,262	131,970	54,161	10,684,969
1909.....	1,158	1,314	9,812	36,556	5,352,818	1,039,969	349,190	154,513	79,456	9,290,829
Per cent of increase.....			-56.3	-7.4	-1.4	60.0	142.9	-14.6	-31.8	15.0
<b>Basalt—</b>										
1919.....	163	174	3,336	37,307	4,742,554	2,030,869	719,988	250,199	41,406	9,657,977
1909.....	196	220	5,256	29,211	2,896,068	1,018,090	279,082	282,501	60,204	5,678,317
Per cent of increase.....			-36.5	27.7	64.3	99.5	158.0	-11.4	-31.2	73.1
<b>Slate—</b>										
1919.....	101	104	3,513	20,613	3,537,504	632,459	417,469	157,788	95,633	5,720,792
1909.....	185	219	8,803	29,777	4,494,132	531,761	327,397	271,252	28,962	6,064,174
Per cent of increase.....			-60.1	-30.8	-21.3	21.2	27.5	-41.8	230.2	-5.5
<b>Marble—</b>										
1919.....	48	62	1,732	15,628	1,706,559	552,439	224,385	34,390	20,582	4,397,912
1909.....	77	108	6,166	21,779	3,462,130	544,327	261,689	47,911	27,344	6,239,120
Per cent of increase.....			-71.9	-28.2	-50.7	1.5	-14.3	-28.2	-24.7	-29.5

<sup>1</sup> Operators, not enterprises, in 1909  
<sup>2</sup> The totals for all industries include, besides those specified, statistics for the chromite industry in 1919 and for the borax, chromite, grindstone, marl, monazite and siron, peat, and precious stones industries in 1909, for which comparable figures could not be given. The value of products of these industries was less than one-tenth of 1 per cent of the total for all industries in 1919 and one-tenth of 1 per cent in 1909.  
<sup>3</sup> Includes \$631,564 which could not be distributed among the stone industries.  
<sup>4</sup> A minus sign (-) denotes decrease.

TABLE 1.—COMPARATIVE SUMMARY FOR THE UNITED STATES, BY INDUSTRIES, PRODUCING ENTERPRISES: 1919 AND 1909—Continued.

INDUSTRY AND CENSUS YEAR.	Number of enterprises. <sup>1</sup>	Number of mines, quarries, or wells.	Wage earners (average number).	Power used (aggregate horsepower).	PRINCIPAL EXPENSES.					Value of products.
					Salaries and wages.	Supplies and materials.	Cost of fuel and purchased power.	Royalties and rents.	Contract work.	
<b>MISCELLANEOUS:</b>										
<b>Abrasive materials—</b>										
1919	34	34	317	1,748	\$377,522	\$116,145	\$56,122	\$25,634	\$62,231	\$721,728
1909	49	82	408	1,344	191,442	37,086	23,637	12,206	9,052	498,290
Per cent of increase <sup>2</sup>			-21.3	30.1	97.2	213.2	137.4	110.0	587.5	44.8
<b>Asbestos—</b>										
1919	10	11	146	420	120,575	47,302	5,430	1,740		249,839
1909	5	20	54	380	41,329	23,120	400	45	400	65,140
Per cent of increase <sup>2</sup>			170.4	10.5	191.7	104.2	1,257.5	3,766.7		283.5
<b>Asphalt—</b>										
1919	9	12	324	648	431,053	378,009	24,876	13,387	5,917	749,520
1909	12	19	205	828	173,106	69,159	13,598	1,517	15,546	466,461
Per cent of increase <sup>2</sup>			58.0	-21.7	149.0	468.3	82.9	782.5	-61.9	60.7
<b>Barites—</b>										
1919	89	98	919	3,029	878,968	238,082	69,724	45,343	10,127	1,592,245
1909	23	42	240	282	110,493	21,756	6,468	14,232	14,346	224,766
Per cent of increase <sup>2</sup>			282.9	1,056.1	695.5	985.1	978.0	218.6	-29.4	608.4
<b>Bauxite—</b>										
1919	10	15	738	2,507	1,099,178	303,558	127,766	152,848		2,190,279
1909	10	10	583	1,585	230,769	21,665	33,624	6,909		670,829
Per cent of increase <sup>2</sup>			31.1	60.2	376.3	1,301.1	308.7	2,112.3		220.5
<b>Clay—</b>										
1919	345	350	5,453	21,243	6,209,401	1,416,999	452,589	465,184	126,355	10,086,298
1909	261	336	3,282	8,868	1,586,509	280,953	108,389	85,403	48,098	2,946,948
Per cent of increase <sup>2</sup>			67.2	139.5	291.4	404.4	317.6	444.7	162.9	242.4
<b>Feldspar—</b>										
1919	30	32	349	1,782	317,184	97,934	33,442	16,391	12,073	584,296
1909	22	28	247	993	135,366	40,852	15,892	9,238	8,681	271,437
Per cent of increase <sup>2</sup>			41.3	79.5	134.3	139.5	110.4	77.4	39.1	115.3
<b>Fluorspar—</b>										
1919	54	72	1,124	7,138	1,491,076	634,498	163,239	101,311	145,916	3,334,880
1909	13	15	290	1,179	193,118	34,695	24,414	1,917	949	288,509
Per cent of increase <sup>2</sup>			287.6	506.4	672.1	1,728.8	568.6	5,184.9	15,275.8	1,055.9
<b>Fuller's earth—</b>										
1919	9	9	824	2,538	634,854	338,011	299,863	5,899	8,556	2,019,226
1909	16	21	327	1,739	156,979	35,797	48,010	5,892	67	315,762
Per cent of increase <sup>2</sup>			152.0	45.9	304.4	844.2	524.6	913.6	12,670.1	539.5
<b>Graphite—</b>										
1919	21	24	419	6,410	463,876	209,266	121,614	2,646	50,696	899,403
1909	19	20	294	2,647	186,083	69,601	35,922	5,765	4,000	344,130
Per cent of increase <sup>2</sup>			42.5	142.2	149.3	200.7	238.6	-64.1	1,167.4	152.6
<b>Gypsum—</b>										
1919	47	48	2,191	15,022	3,083,841	1,630,338	660,420	69,408	3,747	6,805,940
1909	78	222	3,462	17,685	2,372,766	986,658	573,459	74,916	16,566	5,812,810
Per cent of increase <sup>2</sup>			-36.7	-15.0	27.9	55.1	15.2	-7.4	-77.4	17.1
<b>Magnesite—</b>										
1919	11	11	448	2,540	74,487	382,206	296,106	47,193	50,946	2,189,571
1909	6	13	50	126	39,922	6,282	7,566	253		68,463
Per cent of increase <sup>2</sup>			796.0	1,915.9	1,772.4	5,188.2	3,818.8	18,553.4		3,089.0
<b>Mica—</b>										
1919	65	69	448	803	335,066	107,983	22,668	18,893	7,326	607,025
1909	73	78	272	463	139,188	10,377	12,392	5,684	6,086	208,794
Per cent of increase <sup>2</sup>			64.7	73.4	140.7	940.1	82.9	232.4	21.4	193.5
<b>Millstones—</b>										
1919	11	11	37	220	59,766	11,244	7,110	2,175		64,631
1909	14	14	51	166	16,860	483	25	271		34,441
Per cent of increase <sup>2</sup>			-27.5		264.7	2,228.0	28,340.0	702.6		87.7
<b>Mineral pigments—</b>										
1919	23	23	185	1,630	214,752	83,078	30,366	3,499	1,820	489,768
1909	23	26	151	849	60,866	14,710	7,775	2,499	20,388	151,015
Per cent of increase <sup>2</sup>			22.5	92.0	252.9	464.8	260.6	145.0	-93.5	218.4
<b>Phosphate rock—</b>										
1919	48	69	4,373	49,639	4,662,389	2,161,501	1,819,301	209,687	163,696	10,300,198
1909	51	153	7,873	80,526	3,306,651	998,667	1,360,368	345,598	261,949	10,781,192
Per cent of increase <sup>2</sup>			-44.5	-1.8	22.5	140.5	33.7	-39.3	-35.0	-4.5
<b>Pyrite—</b>										
1919	17	18	1,172	7,338	1,569,795	615,726	221,841	43,067	87,061	2,408,648
1909	11	12	1,086	5,758	463,321	152,143	71,537	887	2,730	676,984
Per cent of increase <sup>2</sup>			7.9	27.4	238.8	304.7	210.1	4,754.2	3,089.0	265.8
<b>Silica—</b>										
1919	24	29	166	2,032	198,787	58,185	21,980	4,060	1,847	371,638
1909	14	14	158	1,219	94,774	17,461	12,065	2,959	16,351	281,026
Per cent of increase <sup>2</sup>			5.1	66.7	109.7	238.2	82.0	37.2	-88.7	60.9
<b>Sulphur—</b>										
1919	4	4	1,129	15,291	2,095,189	1,452,136	2,764,194			17,935,882
1909	4	4	366	3,114	434,887	248,382	708,384		361	4,432,066
Per cent of increase <sup>2</sup>			208.5	391.0	381.8	484.6	280.2			304.7
<b>Talc and soapstone—</b>										
1919	28	30	958	7,053	1,049,988	345,166	155,564	38,958	52,757	2,302,393
1909	39	46	1,286	9,433	607,128	199,054	66,339	31,267	8,550	1,174,516
Per cent of increase <sup>2</sup>			-23.7	-25.2	72.9	76.1	134.5	24.5	1,388.1	96.0

<sup>1</sup> Operators, not enterprises, in 1909.

<sup>2</sup> A minus sign (-) denotes decrease.







## MINES AND QUARRIES.

TABLE 3.—DETAILED STATISTICS FOR MINES, QUARRIES, AND WELLS, PRODUCING AND

INDUSTRY.	Number of enterprises.	Number of mines, quarries, or wells.	Number of enterprises operating benevolent plants.	LAND CONTROLLED (ACRES).				PERSONS ENGAGED IN INDUSTRY.									
				Mineral land.			Timber and other lands.	Aggregate.	Proprietors and officials.					Clerks and other subordinate salaried employees.			
				Operated.	Owned.	Leased.			Total.	Proprietors and firm members.		Salaried officers.	Superintendents and managers.			Technical employees.	
										Total.	Performing manual labor.			Male.	Female.		
1 All industries.....	21,997	1,503	1,503	22,947,937	8,729,545	14,294,342	2,215,702	1,084,796	61,588	22,155	5,272	10,729	22,223	6,421	25,854	10,179	
2 Producing enterprises.....	21,280	1,503	1,503	22,474,069	8,568,590	13,290,731	2,208,519	1,077,675	60,409	21,918	5,245	10,456	21,704	6,331	25,649	10,057	
<b>FUELS:</b>																	
3 Coal, anthracite.....	254	1,534	140	261,355	194,390	77,965	159,710	154,882	4,120	159	34	233	2,821	907	2,773	617	
4 Coal, bituminous.....	6,636	8,282	134	8,261,372	5,793,651	2,528,562	751,473	583,608	22,403	4,237	1,830	5,870	9,750	2,546	11,085	4,322	
5 Petroleum and natural gas.....	9,314	257,673		12,171,388	1,172,068	10,999,320		128,110	22,187	14,223	1,967	2,392	4,704	868	6,046	3,672	
<b>METALS:</b>																	
6 Iron ore.....	290	406	74	241,508	177,296	65,280	696,140	48,767	1,286	41	9	130	616	499	1,454	286	
7 Copper.....	195	226	57	392,811	378,839	14,045	255,819	46,909	1,601	103	62	185	596	717	1,493	188	
8 Lead and zinc.....	432	473	262	135,262	99,338	36,118	47,053	24,030	1,374	412	126	166	547	240	593	179	
9 Gold and silver, lode mines.....	740	799	191	142,573	113,347	29,424	46,166	17,531	1,668	712	485	236	505	240	319	83	
10 Gold, placer mines.....	112	182	2	62,857	51,219	11,738	16,890	1,651	232	122	77	38	61	11	26	13	
11 Manganese.....	35	37	8	51,574	12,463	89,111	16	1,032	89	35	6	16	29	9	27	7	
12 Quicksilver.....	26	26	24	27,387	16,820	10,567	5,283	846	81	27	11	11	34	9	13	4	
13 Rare metals.....	22	22	11	18,779	17,200	1,579	30	750	65	11	3	11	32	11	40	12	
<b>STONE:</b>																	
14 Limestone.....	895	925	44	122,820	84,717	38,306	52,963	24,705	1,727	633	175	375	672	47	701	208	
15 Granite.....	358	381	152	30,659	23,799	6,960	6,998	8,951	696	328	145	137	197	34	133	73	
16 Sandstone.....	255	276	66	48,729	34,726	15,435	6,641	4,897	434	179	53	106	143	6	115	61	
17 Basalt.....	163	174	6	15,625	7,139	8,486	1,889	3,791	310	77	20	85	138	10	102	42	
18 Slate.....	101	104	61	5,440	3,673	1,767	2,906	3,852	269	64	21	84	117	4	45	25	
19 Marble.....	48	62	25	28,969	11,818	17,159	6,273	1,891	96	7	3	46	40	3	38	25	
<b>MISCELLANEOUS:</b>																	
20 Abrasive materials.....	34	34	14	15,885	10,334	5,551	1,433	379	53	25	6	6	19	3	3	6	
21 Asbestos.....	10	11	3	2,371	2,200	171		165	14	5	1	1	7	1	4	1	
22 Asphalt.....	9	12		8,899	8,769	130		387	40			9	17	14	19	4	
23 Barytes.....	89	98	5	37,135	31,971	5,164	10,622	1,071	138	93	3	8	31	6	12	2	
24 Bauxite.....	10	15	7	3,997	1,164	2,833	23,998	806	35	2		6	22	5	27	6	
25 Chromite.....	15	16	1	3,389	1,034	2,355	61	60	29	24	12	3	2				
26 Clay.....	345	350	45	105,706	70,498	35,263	7,040	6,087	460	187	48	96	168	9	112	62	
27 Feldspar.....	30	32	4	1,480	761	719	235	398	42	20	6	12	10		5	2	
28 Fluorspar.....	54	72	25	9,623	5,888	3,735	5,942	1,279	127	86	7	29	49	13	22	6	
29 Fuller's earth.....	9	9	8	6,720	4,274	2,446	268	873	40			9	28	3	5	4	
30 Graphite.....	21	24	16	8,114	7,931	183	186	493	49	6	2	5	30	8	22	3	
31 Gypsum.....	47	48	27	41,703	36,581	5,122	490	2,477	103	4	3	28	66	5	135	48	
32 Magnesite.....	11	11	7	2,931	1,375	1,556	930	499	38	13		8	13	4	9	4	
33 Mica.....	65	69	9	5,188	3,225	1,963	781	555	99	67	27	10	21	1	5	3	
34 Millstones.....	11	11		119	16	103		53	15	14	10		1		1		
35 Mineral pigments.....	23	23	11	2,483	1,997	486	1,836	223	30	13	4	7	10		4	4	
36 Phosphate rock.....	48	69	20	160,447	156,418	4,029	81,363	4,761	223	14		43	106	60	134	31	
37 Pyrite.....	17	18	12	9,103	5,532	3,571	8,958	1,268	43			10	27	6	42	11	
38 Silica.....	24	29	8	1,989	1,263	728	439	206	35	17	7	4	14		2	3	
39 Sulphur.....	4	4	1	12,946	12,946		7,565	1,273	59			8	23	23	62	23	
40 Talc and soapstone.....	28	30	23	14,743	11,920	2,823	263	1,069	74	8	2	33	33		20	17	
41 Nonproducing enterprises.....	717			473,888	160,955	313,611	7,183	7,121	1,179	237	27	273	519	150	295	113	
<b>FUELS:</b>																	
42 Coal.....	26	26		24,707	14,317	10,390	97	529	50	5	2	13	17	15	4	4	
43 Petroleum and natural gas.....	156	276		260,131	3,645	256,486		820	262	96	8	47	90	29	56	48	
<b>METALS:</b>																	
44 Iron ore.....	18	18		4,506	2,339	2,167	604	650	29			6	15	8	16	7	
45 Gold, silver, copper, lead, or zinc.....	500	512		176,085	136,432	40,281	5,648	4,665	801	133	17	201	380	87	122	51	
46 MISCELLANEOUS.....	17	17		8,469	4,202	4,287	834	457	37	3		6	17	11	7	3	

<sup>1</sup> Includes 79 anthracite culm washeries and 81 river dredges.

<sup>2</sup> Same number reported for one or more other months.

<sup>3</sup> Includes enterprises in industries as follows: Molybdenum, 2; titanium, 2; tungsten, 6; uranium and vanadium, 12.

NONPRODUCING ENTERPRISES, FOR THE UNITED STATES, BY INDUSTRIES: 1919.

PERSONS ENGAGED IN INDUSTRY—continued.																					
Wage earners.		Wage earners, Dec. 15 or nearest representative day.																			
Average number.	Number 15th day of—		Total.		Foremen, shift bosses, etc.		Engineers, hoistmen, electricians, mechanics, etc.		Miners, quarrymen, and drillmen, including their helpers.		Timbermen, trackmen, and men engaged in hauling, tramping, etc.		Muckers, loaders, and others not classified.		In mills and beneficiating plants (above ground).	Under 16 years of age (above ground).		Capital.			
	Maximum month.	Minimum month.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.		Under 16 years of age.	Females (above ground).				
																		Dollars.			
987, 184	Oc	1,057,830	No	785,087	386,832	708,586	10,526	15,608	135,665	30,249	31,388	397,636	25,896	139,052	136,644	126,793	46,811	222	612	7,108,663,496	1
881, 589	Oc	1,061,204	No	758,156	382,768	705,423	10,314	15,437	134,117	30,145	30,702	395,398	25,583	138,491	135,239	126,952	46,811	221	641	6,955,466,881	2
147, 372	De	151,596	Ap	142,691	46,618	105,625	435	1,098	10,488	4,331	138	59,401	2,769	17,325	12,291	23,470	20,497	119	58	433,868,039	3
545, 798	Oc	599,550	No	308,266	108,746	508,657	4,647	10,922	32,635	22,444	7,025	296,084	14,733	99,480	47,152	80,727	2,564	61	58	1,904,450,123	4
83, 205	De	100,293	Fe	85,119	100,980	.....	.....	.....	64,230	.....	.....	.....	.....	36,750	.....	.....	.....	118	.....	2,421,485,942	5
45, 741	Ja	47,493	De	42,555	19,050	28,690	789	878	6,526	1,053	1,354	15,326	1,677	5,495	7,436	5,938	1,268	6	7	501,396,044	6
43, 717	Ja	58,025	Je	37,885	20,105	25,704	807	1,137	6,167	1,254	1,185	9,455	1,005	8,115	4,352	5,743	6,589	4	74	853,639,017	7
21, 884	Ja	25,124	Je	19,949	9,471	16,697	369	573	2,576	362	109	6,857	304	4,361	1,477	4,544	4,636	4	18	197,223,814	8
15, 436	Au	16,469	Ja	14,778	5,830	11,492	313	485	1,713	815	208	4,980	296	2,202	1,339	3,310	1,961	.....	49	280,388,711	9
1, 380	Jy	1,499	Ja	1,274	1,459	75	106	4	463	.....	.....	122	60	37	4	729	7	2	1	24,574,441	10
909	Fe	1,323	No	622	698	1,048	34	45	154	4	42	694	68	127	291	178	109	2	.....	7,268,426	11
748	Ja	990	Ap	595	455	379	17	16	109	7	31	151	42	114	83	91	173	.....	2	4,423,601	12
633	Ja	921	My	530	599	357	38	22	108	5	104	197	61	66	183	67	105	.....	3	4,889,912	13
22, 069	Au	25,655	Fe	17,398	24,272	780	957	10	3,278	53	8,433	204	1,930	104	8,716	409	958	9	10	82,124,367	14
8, 049	Au	9,228	Ja	5,669	9,166	.....	379	.....	858	.....	3,736	.....	544	.....	1,621	.....	2,028	2	1	18,822,980	15
4, 287	Au	4,961	Fe	3,305	4,861	.....	197	.....	405	.....	1,569	.....	304	.....	1,621	.....	735	1	2	18,865,921	16
3, 536	Au	4,097	Ja	2,037	3,799	.....	144	.....	473	.....	1,120	.....	182	.....	1,828	.....	42	.....	2	12,899,171	17
3, 513	De	3,927	Ja	2,852	3,242	731	133	36	371	3	811	488	200	54	792	150	935	4	.....	6,923,172	18
1, 732	Oc	1,875	Ja	1,459	1,856	.....	66	.....	150	.....	763	.....	41	.....	307	.....	529	.....	.....	9,038,522	19
317	Se	369	Ap	255	398	7	13	.....	41	.....	106	.....	5	24	113	2	101	.....	1	1,442,909	20
146	Oc	241	Ja	43	105	100	3	2	8	.....	27	75	5	3	47	20	15	.....	.....	772,299	21
324	Jy	594	Fe	156	362	78	15	2	35	.....	75	26	8	84	229	16	.....	.....	.....	3,171,405	22
919	Se	1,089	Fe	756	1,155	.....	32	.....	74	.....	318	.....	53	.....	629	.....	49	1	.....	2,290,455	23
738	De	934	Je	581	941	.....	37	.....	77	.....	539	.....	111	.....	65	.....	112	.....	.....	1,950,173	24
31	Fe	39	De	19	44	15	2	1	3	.....	27	9	2	9	3	3	2	.....	.....	1,572,908	25
5, 453	Se	6,020	Fe	4,681	4,547	1,755	174	57	349	25	815	1,066	426	400	2,527	207	256	1	7	17,644,524	26
349	Au	395	Ja	291	432	.....	16	.....	27	.....	228	.....	51	.....	66	.....	44	2	.....	729,404	27
1, 124	Ja	1,377	Mh	957	765	560	45	36	221	35	55	183	32	166	211	140	201	.....	.....	8,046,827	28
824	Se	923	Ja	687	891	.....	23	.....	50	.....	202	.....	50	.....	39	.....	527	.....	29	1,877,233	29
419	Se	475	De	356	517	44	31	3	73	2	69	8	29	23	140	8	175	.....	1	3,755,055	30
2, 191	No	2,715	Ja	1,574	1,381	1,175	37	40	105	40	159	445	208	208	239	442	816	.....	11	13,541,548	31
448	De	670	Fe	236	484	191	25	10	65	2	57	56	26	14	124	109	187	.....	.....	2,612,605	32
448	De	497	Fe	400	378	149	22	11	15	4	115	87	11	19	85	28	130	.....	77	699,373	33
37	My	42	Ja	26	42	.....	1	.....	.....	.....	31	.....	9	.....	1	.....	.....	.....	.....	53,105	34
185	Jy	217	Fe	155	191	48	9	4	20	.....	34	21	7	13	69	10	52	.....	.....	815,572	35
4, 373	De	5,771	Je	2,902	5,764	149	291	3	1,154	.....	968	116	443	7	2,577	23	331	1	23	72,733,956	36
1, 172	Ja	1,651	De	930	590	578	26	28	129	2	41	201	20	108	214	239	160	.....	13	4,455,785	37
166	Jy	224	De	109	229	.....	10	.....	17	.....	40	.....	18	.....	111	.....	33	.....	2	661,711	38
1, 129	Ap	1,545	Je	814	1,615	7	43	.....	878	.....	2	.....	2	.....	692	5	2	.....	4	28,046,634	39
958	No	1,058	Fe	844	728	332	28	14	72	4	16	201	31	47	84	66	497	2	6	6,225,747	40
5, 684	De	6,975	Fe	3,932	4,166	4,103	212	259	1,548	304	688	2,238	313	561	1,407	841	.....	1	71	183,186,665	41
471	No	833	Ja	211	474	347	19	9	68	10	31	271	79	29	277	28	.....	.....	.....	5,617,170	42
454	De	634	Ja	280	762	.....	.....	.....	520	.....	.....	.....	.....	.....	242	.....	.....	.....	5	24,360,853	43
598	Ja	819	Oc	452	425	219	20	16	151	24	46	67	58	81	150	31	.....	.....	1	10,834,660	44
3, 691	De	4,327	Fe	2,525	1,905	3,421	155	226	784	162	203	1,848	156	436	607	749	.....	59	.....	105,260,999	45
410	No	703	Je	283	600	116	18	8	25	8	406	52	20	15	131	33	.....	.....	6	6,432,984	46

\* Includes enterprises in industries as follows: Diatomaceous earth, 9; emery, 2; garnet, 2; pebbles and lining for grinding mills, 3; pumice, 6; rotten stone, 1; stone for whetstones, 2; tripoli, 9.  
 \* Includes enterprises in industries as follows: Barytes, 1; cobalt, 1; limestone, 1; manganese, 2; marble, 1; mica, 1; molybdenum, 2; phosphate rock, 1; pyrite, 1; quicksilver, 2; silica, 1; sulphur, 1; tin, 1; vanadium, 1.

## MINES AND QUARRIES.

TABLE 3.—DETAILED STATISTICS FOR MINES, QUARRIES, AND WELLS, PRODUCING AND

INDUSTRY.	PRINCIPAL EXPENSES OF OPERATION AND DEVELOPMENT.										
	Total.	Salaries and wages.			Supplies and materials.	Cost of ore, coal, and natural gas purchased as material or for resale.	Cost of fuel.	Cost of purchased power.	Royalties and rents.	Taxes—Federal, state, county, and local.	Contract work.
		Salaried officers, superintendents, managers, and technical employees.	Clerks and other subordinate salaried employees.	Wage earners.							
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
1 All industries.....	2,543,887,062	105,892,362	45,380,089	1,304,409,342	528,853,639	35,905,352	84,848,752	23,660,636	178,129,856	141,567,734	82,239,096
2 Producing enterprises...	2,518,543,956	104,235,154	45,093,831	1,295,936,226	519,593,676	35,905,352	83,910,653	23,195,877	175,293,984	140,999,626	79,380,177
FUELS:											
3 Coal, anthracite.....	324,147,994	8,848,535	4,146,934	210,289,473	59,738,376	433,318	11,406,117	1,899,835	11,766,598	14,080,963	1,557,845
4 Coal, bituminous.....	990,738,244	50,334,218	18,334,820	682,601,068	142,432,551	.....	25,896,660	11,280,509	22,295,056	34,707,396	2,855,966
5 Petroleum and natural gas..	626,468,862	21,375,372	12,092,996	134,531,247	195,068,693	28,813,671	19,828,776	965,300	106,458,518	38,690,630	68,663,659
METALS:											
6 Iron ore.....	177,578,869	4,198,832	2,737,828	75,713,459	27,187,832	.....	8,700,358	1,594,231	24,944,936	30,829,610	1,671,783
7 Copper.....	138,286,993	5,018,974	3,020,767	66,390,194	34,275,369	1,528,056	11,310,485	3,555,530	536,819	12,229,046	421,753
8 Lead and zinc.....	65,084,781	2,714,694	1,120,246	30,708,319	15,311,548	406,051	2,783,249	2,591,906	5,258,387	3,326,910	863,471
9 Gold and silver, lode mines..	53,070,119	2,466,693	539,068	23,817,657	13,040,897	4,668,291	1,623,124	2,336,136	1,015,719	2,325,491	1,237,043
10 Gold, placer mines.....	6,314,764	380,410	56,383	1,914,072	2,244,728	.....	20,459	1,123,874	85,899	356,132	132,807
11 Manganese.....	2,150,151	104,481	29,623	1,085,899	2,447,833	.....	52,228	46,107	183,087	60,666	149,237
12 Quicksilver.....	1,693,445	194,368	26,810	827,751	403,269	.....	127,931	29,133	45,194	31,016	7,973
13 Rare metals.....	1,666,420	114,724	47,021	748,235	573,649	7,000	41,416	45,492	45,396	35,609	7,878
STONE:											
14 Limestone.....	45,250,704	2,614,748	1,111,845	23,926,332	10,968,220	.....	2,897,432	1,278,958	667,751	1,119,861	665,557
15 Granite.....	14,107,461	982,092	214,364	8,587,659	2,593,040	.....	833,636	261,185	139,202	377,646	118,637
16 Sandstone.....	8,173,578	630,306	200,327	4,448,811	1,604,432	.....	597,353	250,909	131,970	195,309	54,161
17 Basalt.....	7,983,629	598,157	153,090	3,991,307	2,030,869	.....	562,827	157,161	250,199	198,613	41,406
18 Slate.....	4,914,081	341,487	67,768	3,128,249	632,459	.....	228,954	188,505	157,788	73,238	95,633
19 Marble.....	2,661,848	191,396	62,723	1,452,440	552,439	.....	147,644	76,741	34,380	123,503	20,582
MISCELLANEOUS:											
20 Abrasive materials.....	643,676	46,468	8,675	322,379	116,145	.....	56,122	.....	25,634	6,022	62,231
21 Asbestos.....	178,904	25,088	3,815	91,672	47,202	.....	3,380	2,060	1,740	3,957	.....
22 Asphalt.....	892,928	105,941	30,460	294,652	376,009	.....	24,876	.....	13,387	41,686	5,917
23 Barytes.....	1,259,058	82,375	27,736	768,847	218,582	17,600	50,389	19,335	45,343	18,824	10,127
24 Bauxite.....	1,796,740	103,438	53,933	941,807	308,558	.....	137,766	.....	152,848	102,390	.....
25 Chromite.....	94,465	5,475	.....	44,777	13,330	.....	1,575	.....	4,777	215	24,316
26 Clay.....	8,818,563	646,201	196,118	5,367,082	1,410,999	.....	397,655	54,934	465,184	148,035	126,355
27 Feldspar.....	489,717	45,966	7,458	263,760	97,834	.....	21,284	12,158	16,391	12,793	12,073
28 Fluorspar.....	2,878,431	269,997	35,302	1,195,777	634,498	.....	163,239	.....	101,311	342,391	145,916
29 Fuller's earth.....	1,406,250	85,432	8,209	541,163	338,011	.....	294,260	5,608	5,899	119,067	8,556
30 Graphite.....	871,211	104,099	18,235	341,542	209,256	.....	81,917	39,697	3,646	23,123	50,096
31 Gypsum.....	5,379,732	275,145	280,305	2,478,391	1,580,338	.....	516,148	144,272	69,408	81,983	3,747
32 Magnesite.....	1,488,005	78,918	16,267	652,302	300,741	31,465	258,411	37,604	47,193	14,109	50,846
33 Mica.....	495,364	36,658	9,921	288,487	107,933	.....	20,935	1,733	18,898	3,479	7,325
34 Millstones.....	80,311	10,000	1,800	47,966	11,244	.....	3,750	3,360	2,175	16	.....
35 Mineral pigments.....	341,051	31,620	8,679	174,453	83,078	.....	27,707	2,650	8,499	3,036	1,320
36 Phosphate rock.....	9,364,154	566,477	194,946	3,900,966	2,161,501	.....	1,739,833	79,468	209,657	347,580	163,090
37 Pyrite.....	2,594,728	123,319	61,741	1,384,735	615,726	.....	163,039	58,802	43,057	57,248	37,061
38 Silica.....	290,583	28,835	4,193	165,709	58,185	.....	16,434	5,526	4,060	5,794	1,847
39 Sulphur.....	7,189,753	292,117	120,898	1,682,174	1,452,136	.....	2,764,194	.....	878,234	.....	.....
40 Talc and soapstone.....	1,690,388	172,048	42,527	835,413	345,166	.....	109,090	46,474	39,958	47,955	32,757
41 Nonproducing enterprises	25,343,106	1,657,208	286,258	8,473,116	9,259,963	.....	938,099	465,559	835,874	568,106	2,858,921
FUELS:											
42 Coal.....	1,415,640	74,761	5,225	590,824	651,231	.....	4,548	10,751	19,476	46,289	12,535
43 Petroleum and natural gas..	6,655,716	305,228	105,128	875,923	3,031,107	.....	242,616	7,727	591,729	57,758	1,438,500
METALS:											
44 Iron ore.....	3,212,948	76,266	31,647	985,092	654,141	.....	170,506	41,343	135,982	320,637	797,334
45 Gold, silver, copper, lead, or zinc.	13,256,365	1,122,291	133,419	5,636,646	4,684,728	.....	480,666	404,158	62,848	138,291	593,318
46 MISCELLANEOUS.....	802,437	78,662	10,839	384,631	238,756	.....	39,763	1,580	25,839	5,133	17,234

NONPRODUCING ENTERPRISES, FOR THE UNITED STATES, BY INDUSTRIES: 1919—Continued.

Expenditures for development (included in principal expenses).	Value of products.	POWER USED.															
		Aggregate.	Total horse-power.	Prime movers.								Equipment operated by purchased power.			Electric motors run by current generated by the enterprise reporting.		
				Steam engines (not turbines).		Steam turbines.		Internal-combustion engines.		Water wheels, and turbines.		Electric motors.		Other.	Number.	Horse-power.	
				Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.				
Dollars. 334,615,265	Dollars. 3,156,463,966	6,788,476	5,147,613	46,744	3,259,076	555	474,315	57,417	1,372,098	329	41,524	41,114	1,629,520	9,222	33,039	1,240,466	1
311,278,506	3,156,463,966	6,723,796	5,111,531	46,433	3,232,222	553	473,985	56,983	1,361,146	287	38,112	40,500	1,603,390	8,865	32,980	1,253,795	2
6,189,900 30,044,379 230,867,499	364,084,142 1,145,977,565 931,793,423	899,783 2,155,412 1,821,342	782,090 1,383,934 1,770,181	5,298 9,177 23,412	730,141 1,166,862 532,734	45 313	50,665 195,779	73 1,246 53,699	1,284 21,219 1,237,407	9 2	74 40	1,881 21,186 1,841	117,693 771,131 44,638	347 6,523	3,801 21,044 1,329	185,723 707,341 25,164	3 4 5
14,687,841 13,302,349 4,268,914 7,862,971	218,217,906 181,258,087 75,579,347 58,832,330	370,869 523,591 229,541 149,680	273,477 386,458 117,527 50,437	2,333 842 411 182	231,184 245,398 42,821 20,133	25 79 21 4	28,521 123,223 35,420 4,750	45 129 433 370	5,397 16,327 35,415 11,149	22 10 30 135	8,375 1,510 3,871 14,406	1,841 8,647 2,389 2,523	97,382 135,968 111,874 98,663	10 1,165 140 580	1,112 8,252 635 494	67,595 161,024 22,884 18,892	6 7 8 9
201,259 238,408 161,598 161,958	9,368,561 2,158,312 1,833,484 1,725,642	35,632 5,300 2,607 3,544	3,406 2,610 1,441 1,406	2 36 4 8	40 1,911 106 453	.....	.....	16 24 78 22	719 999 1,335 663	25 .....	2,647	624 67 39 60	32,226 3,190 1,166 2,138	.....	22 3 9 28	601 310 66 350	10 11 12 13
784,673 156,870 96,555 131,800 60,531 30,914	52,943,924 18,279,345 10,684,969 9,657,977 5,720,792 4,397,912	213,717 55,674 33,869 37,307 20,613 15,628	126,387 34,711 21,197 22,844 8,778 6,021	1,776 744 340 259 193 85	109,778 30,231 19,081 21,099 8,669 5,619	17 3	10,701 2,360	252 84 71 30 1 2	5,043 1,343 2,116 520 8 15	9 4	865 777	2,046 450 386 255 426 9,607	87,330 20,903 12,672 14,463 11,835 9,607	..... 60	267 34 155 11 4 19	11,421 1,520 4,696 1,049 44 480	14 15 16 17 18 19
14,849 46,503 376,579 20,503 11,064	721,728 249,839 749,520 1,562,245 2,190,279	1,748 420 648 3,029 2,507	1,748 355 648 2,049 2,507	17 1 6 31 28	1,253 75 545 1,730 840	.....	.....	16 6 16 11	240 155 103 269 1,667	1 3	225 125	..... 2	..... 65	.....	3 6 94	120 225 2,564	20 21 22 23
2,650 265,009 13,197 363,465 23,565	105,841 10,066,298 594,296 3,334,880 2,019,226	136 21,243 1,782 7,138 2,538	136 16,922 1,227 7,138 2,250	..... 263 16 121 35	..... 15,653 1,081 6,036 1,720	1 100	.....	11 105 8 87 9	136 1,179 70 1,052 630	.....	.....	181 7 565	4,271 40	..... 66	..... 1,815	.....	25 26 27
164,849 12,060 10,868 65,024	869,403 6,805,940 2,199,571 607,025 64,631	6,410 15,032 2,540 803 220	2,241 7,038 827 763 60	15 47 2 22 1	1,873 6,132 80 700 .....	.....	.....	7 9 26 6	368 572 747 63	..... 3	370 334	106 290 70 3 2	4,169 7,994 1,713 40 100	..... 103	10 103	552 1,447	30 31 32 33 34
5,456 353,237 145,615 37,921 56,478 59,087	490,768 10,300,198 2,408,648 371,638 17,935,882 2,302,393	1,630 49,639 7,338 2,032 15,291 7,063	1,460 46,976 3,224 1,699 15,291 4,067	18 100 35 10 544 19	862 17,140 1,970 860 11,581 1,777	..... 17 1 ..... 23 .....	..... 17,761 120	6 44 7 10 13 11	228 12,065 84 354 390 165	5 6 4	370 1,060 485	8 38 98 11	170 2,663 4,111 333	..... 320 27	..... 33,107 3,696	.....	35 36 37 38 39 40
22,738,787	.....	82,689	34,062	311	20,788	2	330	429	11,562	42	3,412	614	26,190	417	59	1,671	41
1,253,604 5,685,921	.....	2,534 5,543	1,819 5,047	13 103	1,785 3,696	.....	.....	4 67	34 1,352	.....	.....	21 8	715 496	.....	4 1	150 2	42 43
2,702,453 12,306,117	.....	10,175 42,786	6,235 21,454	41 142	6,201 7,997	2	330	2 344	34 9,715	42	3,412	44 540	3,940 20,914	417	6 48	750 799	44 45
730,662	.....	1,662	1,527	12	1,110	.....	.....	12	417	.....	.....	1	125	.....	.....	.....	46







MINES AND QUARRIES.

TABLE 4.—DETAILED STATISTICS FOR MINES, QUARRIES, AND WELLS, PRODUCING AND

Table with 14 columns: STATE, Total, Salaries and wages (Salaried officers, Clerks and other subordinate salaried employees, Wage earners), Supplies and materials, Cost of ore, coal and natural gas purchased as material or for resale, Cost of fuel, Cost of purchased power, Royalties and rents, Taxes—Federal, state, county, and local, Contract work. Rows include United States, Producing enterprises (Alabama to Wyoming), and Nonproducing enterprises (Arizona to Wyoming).

1 Includes enterprises as follows: Alabama, 2; Arkansas, 2; Connecticut, 1; Florida, 1; Georgia, 1; Illinois, 1; Iowa, 1; Maine, 1; Missouri, 1; New York, 1; North Carolina, 2; Tennessee, 1.

GENERAL TABLES.

NONPRODUCING ENTERPRISES, FOR THE UNITED STATES, BY STATES: 1919.

Table with columns for Expenditures for development, Value of products, Aggregate, Total horsepower, and Prime movers (Steam engines, Steam turbines, Internal-combustion engines, Water wheels). Also includes Equipment operated by purchased power (Electric motors, Other) and Electric motors run by current.

## MINES AND QUARRIES.

TABLE 5.—WAGE EARNERS, BY MONTHS, ALL MINING ENTERPRISES, BY INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent-minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries</b> .....	<b>987,184</b>	<b>1,030,037</b>	<b>989,301</b>	<b>973,868</b>	<b>956,932</b>	<b>963,827</b>	<b>970,832</b>	<b>1,011,800</b>	<b>1,038,038</b>	<b>1,050,107</b>	<b>1,067,830</b>	<b>768,067</b>	<b>1,038,960</b>	<b>72.3</b>
<b>Producing enterprises</b> .....	<b>981,560</b>	<b>1,025,871</b>	<b>985,369</b>	<b>969,499</b>	<b>952,305</b>	<b>958,506</b>	<b>965,230</b>	<b>1,005,219</b>	<b>1,031,628</b>	<b>1,043,719</b>	<b>1,061,304</b>	<b>758,166</b>	<b>1,032,014</b>	<b>72.1</b>
<b>FUELS:</b>														
Coal, anthracite.....	147,372	146,241	145,985	143,437	<i>142,691</i>	144,925	145,010	148,397	149,220	149,522	150,847	150,594	151,595	94.2
Coal, bituminous.....	545,798	589,864	561,861	550,126	532,632	535,110	541,647	566,897	583,120	593,304	<del>609,650</del>	598,299	587,149	51.4
Petroleum and natural gas.....	93,205	85,225	<i>86,119</i>	87,130	88,120	90,015	91,156	94,389	98,570	99,570	99,332	99,541	100,223	84.9
<b>METALS:</b>														
Iron ore.....	45,741	<b>47,493</b>	47,205	46,712	44,822	45,631	44,625	46,286	46,754	46,911	45,772	44,126	<i>43,655</i>	89.6
Copper.....	43,717	<b>58,025</b>	49,136	43,701	40,675	38,374	37,885	39,919	41,386	42,595	44,395	45,246	<b>43,267</b>	65.3
Lead and zinc.....	21,884	<b>25,124</b>	23,434	22,574	21,506	20,196	<i>19,949</i>	20,207	21,050	21,162	21,579	22,631	23,198	79.4
Gold and silver, lode mines.....	15,436	<i>14,778</i>	14,915	15,095	14,921	15,184	15,540	16,319	<b>16,469</b>	15,349	15,536	15,456	15,670	89.7
Gold and silver, placer mines.....	1,380	<i>1,274</i>	1,312	<i>1,274</i>	1,317	1,424	1,420	<b>1,499</b>	1,430	1,404	1,425	1,433	1,348	85.0
Manganese.....	909	1,202	<b>1,323</b>	1,155	1,159	1,115	767	782	758	745	656	<del>632</del>	<b>624</b>	47.0
Quicksilver.....	748	990	775	769	<i>696</i>	676	779	766	758	742	708	715	703	60.1
Rare metals.....	633	<b>921</b>	834	727	544	<i>550</i>	567	557	569	558	646	568	545	57.5
<b>STONE:</b>														
Limestone.....	22,069	18,085	<i>17,398</i>	18,847	<b>21,476</b>	22,992	23,667	24,599	<b>25,658</b>	25,308	23,901	22,638	<b>20,267</b>	67.8
Granite.....	8,049	<i>6,669</i>	5,844	6,504	7,771	8,620	8,945	9,071	<b>9,228</b>	9,024	9,101	8,741	<b>8,070</b>	61.4
Sandstone.....	4,287	3,471	<i>3,205</i>	3,681	4,128	4,411	4,533	4,667	<b>4,861</b>	4,916	4,726	4,598	<b>4,047</b>	66.6
Basalt.....	3,336	<i>2,037</i>	<i>2,087</i>	2,456	3,257	3,680	3,828	3,985	<b>4,097</b>	3,906	3,908	3,710	3,131	49.7
Slate.....	3,513	<i>2,858</i>	2,909	3,060	3,415	3,580	3,764	3,858	<b>3,572</b>	3,594	3,729	3,896	<b>3,227</b>	72.6
Marble.....	1,732	<i>1,459</i>	1,497	1,641	1,688	1,778	1,826	1,833	1,865	1,810	1,875	1,759	1,758	77.8
<b>MISCELLANEOUS:</b>														
<b>Abusive materials:</b>														
Asbestos.....	146	45	74	77	112	138	130	159	159	199	241	239	181	17.8
Asphalt.....	324	157	<i>166</i>	170	197	212	242	<b>294</b>	528	401	407	399	425	26.3
Barytes.....	919	773	<i>766</i>	782	828	887	938	980	983	<b>1,009</b>	1,065	965	964	66.4
Bauxite.....	738	755	656	636	637	612	581	643	628	900	847	827	<b>824</b>	62.2
Chromite.....	31	36	<b>39</b>	25	27	36	38	31	25	35	28	33	19	48.7
Clay.....	5,453	<b>4,849</b>	<i>4,681</i>	4,851	5,373	5,522	5,582	5,771	5,883	<b>6,090</b>	5,853	5,538	5,513	77.8
Feldspar.....	349	<i>291</i>	297	342	334	347	371	346	398	<b>395</b>	352	339	379	78.7
Fluorspar.....	1,124	<b>1,377</b>	1,059	<i>957</i>	1,007	998	1,001	1,031	1,134	<b>1,288</b>	1,313	1,211	1,112	69.5
Fuller's earth.....	824	<i>687</i>	691	715	784	829	840	880	916	<b>923</b>	858	870	895	74.4
Graphite.....	419	432	398	378	454	470	447	398	407	<b>475</b>	415	398	<i>366</i>	74.9
Gypsum.....	2,191	<i>1,574</i>	1,649	1,782	1,918	2,078	2,092	2,350	2,327	<b>2,532</b>	2,713	<b>2,715</b>	2,512	58.0
Magnesite.....	448	<i>452</i>	<i>256</i>	342	232	245	250	435	534	615	<b>629</b>	656	<b>670</b>	35.2
Mica.....	448	414	<b>400</b>	416	430	430	431	439	464	478	490	487	<b>497</b>	80.5
Millstones.....	37	<i>28</i>	<i>28</i>	37	40	42	42	41	40	40	38	38	34	61.9
Mineral pigments.....	185	159	<i>155</i>	181	175	198	178	217	193	193	193	187	191	71.4
Phosphate rock.....	4,373	<b>4,583</b>	4,865	4,741	4,972	3,259	<b>2,808</b>	3,419	3,873	4,094	4,639	5,358	<b>5,771</b>	50.3
Pyrite.....	1,172	1,681	1,618	1,444	1,124	1,078	988	1,076	1,065	1,118	1,017	965	<b>880</b>	58.3
Silica.....	166	138	142	149	161	171	217	<del>224</del>	220	185	144	132	<i>109</i>	45.7
Sulphur.....	1,129	1,492	1,390	1,406	<b>1,548</b>	1,503	814	832	845	833	932	973	<b>933</b>	52.7
Talc and soapstone.....	958	902	<i>844</i>	876	885	904	931	966	1,008	1,022	1,036	1,068	1,047	79.8
<b>Nonproducing enterprises</b> .....	<b>5,624</b>	<b>4,166</b>	<b>3,968</b>	<b>4,369</b>	<b>4,627</b>	<b>5,321</b>	<b>5,602</b>	<b>6,171</b>	<b>6,410</b>	<b>6,388</b>	<b>6,616</b>	<b>6,911</b>	<b>6,975</b>	<b>56.4</b>
<b>FUELS:</b>														
Coal.....	471	<i>211</i>	232	268	278	291	382	463	507	625	735	833	827	25.3
Petroleum and natural gas.....	454	<i>260</i>	274	325	352	424	450	461	531	538	577	622	634	41.0
<b>METALS:</b>														
Iron ore.....	598	<b>819</b>	595	575	634	698	639	606	624	527	<i>452</i>	477	530	55.2
Gold, silver, copper, lead or zinc.....	3,691	<b>2,565</b>	<b>2,625</b>	2,880	3,079	3,623	3,848	4,306	4,325	4,254	4,284	4,276	<b>4,287</b>	58.4
<b>MISCELLANEOUS, all other</b> .....	<b>410</b>	<b>311</b>	<b>306</b>	<b>321</b>	<b>284</b>	<b>285</b>	<b>283</b>	<b>335</b>	<b>423</b>	<b>444</b>	<b>568</b>	<b>708</b>	<b>657</b>	<b>40.3</b>

GENERAL TABLES.

TABLE 6.—WAGE EARNERS, BY MONTHS, ALL MINING ENTERPRISES, BY STATES: 1919.

[The month of maximum employment for each state is indicated by bold-faced figures and that of minimum employment by italic figures.]

Table with columns for STATE, Average number employed during year, and NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY (January-December). Includes sub-totals for United States, Producing enterprises, and Nonproducing enterprises. Values are in thousands and include percentage of maximum employment.

## MINES AND QUARRIES.

TABLE 7.—FUEL USED, ALL MINING ENTERPRISES, BY INDUSTRIES: 1919.

INDUSTRY.	COAL.		Coke (tons, 2,000 pounds).	Wood (cords).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Natural gas (1,000 cu. ft.).
	Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).					
<b>All industries.....</b>	<b>8,697,367</b>	<b>16,339,639</b>	<b>59,794</b>	<b>131,803</b>	<b>9,747,151</b>	<b>156,936</b>	<b>1 103,432,217</b>
<b>Producing enterprises.....</b>	<b>8,697,365</b>	<b>16,275,751</b>	<b>53,795</b>	<b>113,850</b>	<b>9,537,443</b>	<b>143,593</b>	<b>1 102,784,812</b>
<b>FUELS:</b>							
Coal, anthracite.....	8,548,201	4,096			671	1,331	
Coal, bituminous.....		11,124,904	14,254	594	3,225	18,963	865,907
Petroleum and natural gas.....		67,216		2,852	5,898,610	45,654	99,967,358
<b>METALS:</b>							
Iron ore.....	69,753	1,499,612	24,070	912	3,807	3,550	1 89,354
Copper.....	14,889	1,364,172	9,744	5,236	1,322,100	6,932	33,456
Lead and zinc.....	33,626	503,278	272	3,570	72,517	6,261	1,390,098
Gold and silver, lode mines.....	45	191,526	369	17,755	130,269	15,821	
Gold, placer mines.....	72	992	1	1,691	114	491	
Manganese.....		6,057		355	105	995	
Quicksilver.....	1	5		3,291	20,957	3,857	
Rare metals.....		3,102		1,158	300	1,933	
<b>STONE:</b>							
Limestone.....	5,409	673,989	937	4,765	33,221	11,397	5,887
Granite.....	1,723	115,250	55	4,297	13,164	2,411	
Sandstone.....	2,418	128,832	1,530	180	8,621	1,423	145,943
Basalt.....	2,099	84,566		2,129	15,390	620	
Slate.....	8,762	34,053		214	36	1	
Marble.....	210	31,158		328		170	
<b>MISCELLANEOUS:</b>							
Abrasive materials.....	3,359	3,016		423	44	332	
Asbestos.....		300			300	100	
Asphalt.....		5,427		88	2,761	154	
Baryte.....		5,874		500	83	659	
Bauxite.....		10,914		7,962	575	844	275,977
Chromite.....						150	
Clay.....	345	84,065		1,424	51,646	1,819	9,000
Feldspar.....		3,124		200	37	134	
Fluorspar.....		41,677		710	151	1,220	
Fuller's earth.....	100	10,857		9,878	82,461	713	
Graphite.....	5,100	2,853		690	1,785	497	
Gypsum.....		76,096	1,534	43	62,893	1,752	
Magnetite.....		22,178	645	790	66,563	1,124	
Mica.....	3	2,655		881	7	131	
Millstones.....	3	780					
Mineral pigments.....	863	4,239		290		244	
Phosphate rock.....	28	121,273	146	39,961	657,284	10,871	
Pyrite.....		31,661		311		368	
Silica.....	30	2,636				114	1,428
Sulphur.....		308	20		1,067,786	740	
Talc and soapstone.....	426	12,976	218	447		257	396
<b>Nonproducing enterprises.....</b>	<b>2</b>	<b>64,068</b>	<b>5,999</b>	<b>17,953</b>	<b>209,708</b>	<b>13,343</b>	<b>647,406</b>
<b>FUELS:</b>							
Coal.....		1,691				30	
Petroleum and natural gas.....		6,222		1,256	181,037	2,357	624,113
<b>METALS:</b>							
Iron.....		32,498	5,987	350		83	
Gold, silver, copper, lead or zinc.....	2	20,727	12	15,470	26,960	10,775	23,392
<b>MISCELLANEOUS, all other.....</b>		<b>2,950</b>		<b>877</b>	<b>1,691</b>	<b>98</b>	

<sup>1</sup> 89,354 M cubic feet reported for the iron-ore industry was manufactured gas.

GENERAL TABLES.

TABLE 8.—FUEL USED, ALL MINING ENTERPRISES, BY STATES: 1919.

STATE.	COAL.		Coke (tons, 2,000 pounds).	Wood (cords).	Fuel oil (barrels).	Gasoline and other volatile oils (barrels).	Natural gas (1,000 cu. ft.).
	Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).					
<b>United States</b> .....	<b>8,697,367</b>	<b>16,339,839</b>	<b>59,794</b>	<b>131,803</b>	<b>9,747,151</b>	<b>156,936</b>	<b>1 108,432,217</b>
<b>Producing enterprises</b> .....	<b>8,697,365</b>	<b>16,275,751</b>	<b>53,795</b>	<b>113,850</b>	<b>9,537,443</b>	<b>143,593</b>	<b>1 102,784,812</b>
Alabama.....		761,298	31,723	1,965	410	1,003	
Arizona.....		84,938	174	1,612	1,279,173	6,706	
Arkansas.....		74,238		3,020	833	667	328,057
California.....	125	1,927	1,215	8,241	2,264,670	10,301	19,981,849
Colorado.....	112	409,278	110	1,109	4,588	1,634	6,820
Connecticut.....	78	11,601		335		118	
Delaware.....		2,543				34	
District of Columbia.....						77	
Florida.....	100	32,698	146	44,567	787,431	11,611	
Georgia.....		55,354		6,442	397	822	
Idaho.....		15,360	84	3,891	726	723	
Illinois.....		2,092,655	400		7,536	4,272	1,809,962
Indiana.....	1,366	790,153	10		678	1,529	329,798
Iowa.....		210,939	465	115	42	1,675	
Kansas.....		212,503		747	694,541	3,972	8,088,328
Kentucky.....		724,385		675	38,148	12,069	751,455
Louisiana and Mississippi.....		2,400			1,141,582	457	13,546,954
Maine.....		9,586		250		236	
Maryland.....	2	67,827		65		688	
Massachusetts.....	69	22,871	50	290	29	57	
Michigan.....	18,891	1,371,023	4,013		2,826	1,570	33,781
Minnesota.....	3,248	736,392	758	477	1,230	2,666	
Missouri.....		488,858		2,936	14,161	2,425	21,898
Montana.....		325,737	4,874	5,683	951	1,459	671,621
Nebraska.....		1,834				44	
Nevada.....		113,708	376	2,977	64,363	8,476	
New Hampshire.....	53	5,027		420	88	162	
New Jersey.....	57,267	62,486	151	21	18,880	618	
New Mexico.....		232,846	62	387	50,784	1,904	
New York.....	52,356	82,852	1,123	250	430	1,084	1,097,257
North Carolina.....		41,234	5	960	16	277	
North Dakota.....		16,437				451	
Ohio.....	100	862,717	788	139	1,385	4,946	5,439,280
Oklahoma.....		280,339		110	237,780	21,011	16,338,709
Oregon.....		5,280		3,688	6,548	662	
Pennsylvania.....	8,561,045	3,574,674	219	2,376	1,068	13,801	1 10,047,604
Rhode Island.....	118	6,316		6		187	
South Carolina.....		18,949		3,113		86	
South Dakota.....		42,111	236	2,719	2,748	327	
Tennessee.....		298,649	29	5,631	1,240	1,017	1,350
Texas.....		66,749	5,170	2,176	2,739,800	13,287	10,396,846
Utah.....	28	197,366	1,123	39	2,276	1,487	
Vermont.....	2,328	24,896	218	261		67	
Virginia.....	64	209,851	170	1,886	706	499	
Washington.....		197,152		2,747	47,095	2,110	
West Virginia.....		1,157,991		50	524	2,541	12,149,549
Wisconsin.....	15	50,600	99	1,778	1,950	929	
Wyoming.....		241,089	14	6	119,210	802	1,743,724
<b>Nonproducing enterprises</b> .....	<b>2</b>	<b>64,088</b>	<b>5,999</b>	<b>17,953</b>	<b>209,708</b>	<b>13,343</b>	<b>647,405</b>
Arizona.....		292		949	22,117	7,029	
California.....	2	61	2	3,465	3,297	1,602	110,854
Colorado.....		4,023		1,692	750	182	
Idaho.....		2,085	6	3,496	808	376	
Kansas.....		1,026			480	56	9,694
Kentucky.....		716				8	690
Louisiana and Mississippi.....				1,256	3,045		5,250
Michigan.....		6,346	4			57	
Minnesota.....		12,858				50	
Montana.....		4,202		1,062	500	349	
Nevada.....		154		363	3,080	1,544	
New Mexico.....		2,720		474	65	178	
Ohio.....		474					2,200
Oklahoma.....		2,200			2,186		54,098
Oregon.....				320		48	
Pennsylvania.....		178				10	
South Dakota.....		1,000		1,390			
Texas.....		1,529			159,791	900	377,690
Utah.....		1,427		295	1,850	249	
Virginia.....		870			158	50	
Washington.....		516		362		310	5,000
West Virginia.....							1,350
Wisconsin.....		8,918		350		102	
Wyoming.....		1,516		354	12,626	124	80,400
All other <sup>1</sup> .....		11,528	5,987	2,175		119	

<sup>1</sup> Includes 59,254 M cubic feet of manufactured gas.

<sup>2</sup> Includes Alabama, Arkansas, Connecticut, Florida, Georgia, Illinois, Iowa, Maine, Missouri, New York, North Carolina, and Tennessee.









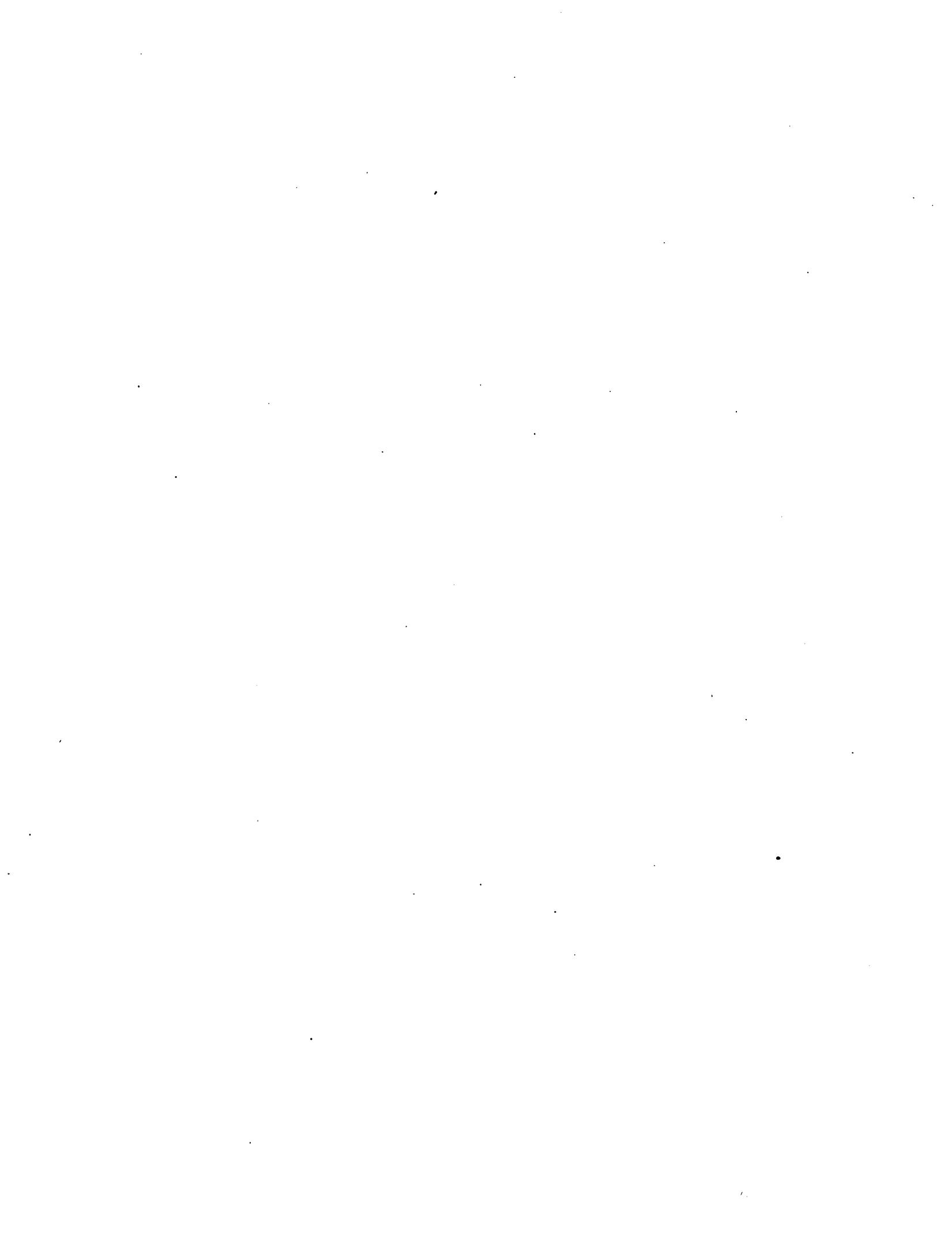
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**REPORTS FOR STATES**

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## ALABAMA.

Alabama, which ranks twenty-eighth among the states in size (land area 51,279 square miles) and eighteenth in population (2,348,174 in 1920), ranked thirteenth in value of mineral products for the year 1919. The state ranked seventh in the total number of persons engaged in mining industries and in the average number of wage earners employed.

The total value of products of all mines and quarries in Alabama in 1919 was \$59,866,040, an increase of 145.8 per cent over the gross value reported at the census of 1909. The increases in wages, cost of supplies and materials, fuel and power, and in the value of products, as shown in Table 1, are largely due to general price increases and are not a measure of the growth of mining in Alabama during the census period 1909-1919. The progress of the industry is better indicated by the increases in the number of enterprises and mines and quarries and in the average number of wage earners employed.

The industries reported for 1919, ranked according to value of products, were the mining or quarrying of bituminous coal, iron ore, limestone, marble, graphite, pyrite, clay, sandstone, bauxite, barytes, mica, and mineral pigments. In addition to producing the materials indicated by the industry designation, three coal enterprises produced clay as a by-product and one clay mine produced coal. The mining industries which can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mining industry, coal, reported products valued at \$45,359,441, which was 75.8 per cent of the total value of the mineral products of the state. This amount gave Alabama seventh rank as a coal-producing state. The coal-mining district, which centers around Birmingham and extends over parts of 14 counties (11 of which were producing in 1919), is part of the Southern Appalachian Coal Field and produces a number of kinds of bituminous coal suitable for all industrial and domestic uses.

The iron-mining industry, second in importance, is also centered in the Birmingham district, 8 counties reporting products to the value of \$12,291,760. In 1919 Alabama was third in the production of iron ore, Minnesota ranking first and Michigan second.

Graphite to the value of \$337,425 was produced in

Clay and Coosa Counties. Alabama was exceeded only by New York in the production of graphite.

The quarrying industries in the state produced stone valued in excess of one and one-half million dollars, which was used chiefly for metallurgical flux.

The preponderance of corporate organization is clearly brought out by Table 3. Corporations conducted 89.8 per cent of all the mining enterprises in the state in 1919, reported 97.2 per cent of the average number of wage earners, and 97.6 per cent of the total value of products. The importance of corporate organization is shown also for each of the principal industries.

The relatively large number of small enterprises as determined by the number of wage earners employed is shown in Table 4. Of the total number of enterprises in this state, 70.5 per cent had no wage earners or fewer than 101 and the wage earners employed were 18.3 per cent of the total number of wage earners. Enterprises employing more than 100 wage earners constituted 29.6 per cent of the total number of enterprises and employed 81.8 per cent of the total number of wage earners. Table 4 also shows that in the leading industries a relatively small number of the large enterprises, 31.4 per cent in the coal industry and 38.5 per cent in the iron-ore industry, employed, respectively, 82.5 per cent and 86.7 per cent of the total number of wage earners in these industries.

Table 5 shows that in a majority of the enterprises and for two-thirds of the wage earners in all the mining industries in the state in 1919 the hours of labor were 44 to 53 per week, or that the 8-hour day prevailed. This was the condition in coal mining, which was the principal industry. In the other leading industries, however, the prevailing hours of labor were largely from 54 to 62 hours per week or 9 hours per day.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The extremely low minimum in the coal industry, which affects the figures for all industries combined, was very abnormal and was the result of the great November strike.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

## MINES AND QUARRIES—ALABAMA.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises .....	264	177	49.2	Capital.....	\$84,167,016	\$85,081,804	-1.1
Number of mines and quarries.....	348	302	15.2	Principal expenses:			
Persons engaged.....	34,632	20,119	15.0	Salaries.....	3,934,834	1,678,353	134.4
Proprietors and firm members, total.....	41	76		Wages.....	30,229,723	14,257,709	154.1
Number performing manual labor in or about the mines and quarries.....	6	11		Contract work.....	167,070	767,385	-78.2
Salaried employees.....	2,012	1,772	13.5	Supplies and materials.....	7,480,910	2,620,390	185.5
Wage earners (average number).....	32,579	23,271	15.2	Fuel and power.....	3,080,283	1,048,824	193.7
Power used (horsepower).....	145,775	91,924	58.6	Royalties and rents.....	838,101	333,828	151.1
				Taxes.....	1,699,630	186,350	817.0
				Value of products.....	59,866,040	24,350,667	145.8

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.  
<sup>2</sup> Includes cost of coal purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	264	32,579	100.0	\$59,866,040	100.0	Limestone.....	15	835	2.6	\$1,340,961	2.2
Coal, bituminous.....	188	24,648	75.7	45,359,441	75.8	Graphite.....	9	166	0.5	337,425	0.6
Iron ore.....	39	6,485	19.9	12,291,760	20.5	All other industries <sup>1</sup> .....	13	445	1.4	536,453	0.9

<sup>1</sup> Includes enterprises in industries as follows: Barytes, 1; bauxite, 1; clay, 4; marble, 2; mica, 1; mineral pigments, 1; pyrite, 1; sandstone, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	264	32,579	\$59,866,040	\$226,785	100.0	100.0	100.0
Corporation.....	237	31,679	58,448,772	246,619	89.8	97.2	97.6
Individual <sup>1</sup> .....	18	324	500,566	27,809	6.8	1.0	0.8
Firm.....	9	576	916,702	101,856	3.4	1.8	1.5
COAL, BITUMINOUS.....	188	24,648	45,359,441	241,274	100.0	100.0	100.0
Corporation.....	168	26,786	43,997,017	261,887	89.4	96.5	97.0
Individual <sup>1</sup> .....	12	289	448,389	37,366	6.4	1.2	1.0
Firm.....	8	573	914,035	114,284	4.3	2.3	2.0
IRON ORE.....	39	6,485	12,291,760	315,178	100.0	100.0	100.0
Corporation <sup>2</sup> .....	39	6,485	12,291,760	315,178	100.0	100.0	100.0
LIMESTONE.....	15	835	1,340,961	89,297	100.0	100.0	100.0
Corporation.....	12	814	1,316,990	109,749	80.0	97.5	98.3
Individual.....	3	21	23,971	7,990	20.0	2.5	1.8
GRAPHITE.....	9	166	337,425	37,492	100.0	100.0	100.0
Corporation.....	9	166	337,425	37,492	100.0	100.0	100.0

<sup>1</sup> Includes 1 other form of organization.

<sup>2</sup> Includes 2 individuals.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	<b>264</b>	<b>100.0</b>	<b>32,579</b>	<b>100.0</b>	<b>IRON ORE</b> .....	<b>39</b>	<b>100.0</b>	<b>6,485</b>	<b>100.0</b>
No wage earners.....	1	0.4	.....	.....	No wage earners.....	1	2.6	.....	.....
1 to 5.....	30	11.4	99	0.3	1 to 5.....	1	2.6	2	( <sup>1</sup> )
6 to 20.....	51	19.3	650	2.0	6 to 20.....	7	17.9	76	1.2
21 to 50.....	61	23.1	2,080	6.4	21 to 50.....	9	23.1	325	5.0
51 to 100.....	43	16.3	3,113	9.6	51 to 100.....	6	15.4	462	7.1
101 to 500.....	66	25.0	14,626	44.9	101 to 500.....	12	30.8	1,953	30.1
501 to 1,000.....	7	2.7	4,648	14.3	501 to 1,000.....	2	5.1	1,132	17.5
Over 1,000.....	5	1.9	7,363	22.6	Over 1,000.....	1	2.6	2,535	39.1
<b>COAL, BITUMINOUS</b> .....	<b>188</b>	<b>100.0</b>	<b>24,648</b>	<b>100.0</b>	<b>LIMESTONE</b> .....	<b>15</b>	<b>100.0</b>	<b>835</b>	<b>100.0</b>
1 to 5.....	18	9.6	63	0.3	1 to 5.....	3	20.0	8	1.0
6 to 20.....	36	19.1	478	1.9	6 to 20.....	2	13.3	36	4.3
21 to 50.....	42	22.3	1,407	5.7	21 to 50.....	6	40.0	207	24.8
51 to 100.....	33	17.6	2,383	9.7	51 to 100.....	1	6.7	52	6.2
101 to 500.....	50	26.6	11,978	48.6	101 to 500.....	3	20.0	532	63.7
501 to 1,000.....	5	2.7	3,516	14.3	<b>GRAPHITE</b> .....	<b>9</b>	<b>100.0</b>	<b>166</b>	<b>100.0</b>
Over 1,000.....	4	2.1	4,828	19.6	1 to 5.....	3	33.3	10	6.0
					6 to 20.....	3	33.3	36	21.7
					21 to 50.....	2	22.2	68	41.0
					51 to 100.....	1	11.1	52	31.3

<sup>1</sup> Less than one-tenth of 1 per cent.

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
<b>All industries</b> .....	<b>1,263</b>	<b>32,579</b>	<b>11</b>	<b>201</b>	<b>54</b>	<b>3,969</b>	<b>142</b>	<b>21,722</b>	<b>54</b>	<b>6,619</b>	<b>1</b>	<b>23</b>	<b>1</b>	<b>45</b>
Coal, bituminous.....	188	24,648	9	185	52	3,765	122	20,045	5	653	.....	.....	.....	.....
Iron ore.....	38	6,485	.....	.....	2	204	11	1,274	25	5,007	.....	.....	.....	.....
Limestone.....	15	835	.....	.....	.....	.....	7	267	8	468	.....	.....	.....	.....
Graphite.....	9	166	1	14	.....	.....	.....	.....	6	84	1	23	1	45
All other industries.....	13	445	1	2	.....	.....	2	36	10	407	.....	.....	.....	.....

<sup>1</sup> Exclusive of 1 iron ore-mining enterprise employing no wage earners.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries</b> .....	<b>32,579</b>	<b>34,594</b>	<b>34,682</b>	<b>34,252</b>	<b>32,719</b>	<b>31,117</b>	<b>31,042</b>	<b>31,751</b>	<b>32,521</b>	<b>32,936</b>	<b>33,747</b>	<b>33,781</b>	<b>32,806</b>	<b>83.0</b>
Coal, bituminous.....	24,648	25,762	25,784	25,805	25,558	24,398	24,442	24,612	24,445	24,548	25,402	26,298	24,722	78.7
Iron ore.....	6,485	7,450	7,423	7,034	5,641	5,261	5,813	5,827	6,625	6,798	6,873	7,028	6,647	70.9
Limestone.....	835	808	808	832	853	798	744	730	845	904	861	874	873	80.8
Graphite.....	166	160	163	150	225	218	206	115	129	193	144	159	130	51.1
All other industries.....	445	414	419	431	442	442	437	467	477	463	467	423	429	84.6

## MINES AND QUARRIES—ALABAMA.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.					
	Total.	Coal, bituminous.	Iron ore.	Limestone.	Graphite.	All other. <sup>1</sup>
Number of enterprises.....	264	188	39	15	9	13
Number of mines and quarries.....	348	260	48	15	12	13
Capital.....	\$84,167,016	\$62,728,860	\$17,349,604	\$1,039,505	\$1,808,674	\$1,240,373
Principal expenses:						
Salaries and wages—						
Officers.....	\$873,220	\$776,452	\$45,891	\$18,024	\$17,350	\$15,508
Superintendents and managers.....	\$1,293,620	\$972,740	\$207,890	\$61,156	\$27,296	\$25,083
Technical employees.....	\$421,499	\$293,112	\$111,147	\$3,980	\$9,460	\$3,820
Clerks, etc.....	\$1,346,495	\$918,371	\$371,540	\$34,797	\$7,921	\$13,866
Wage earners.....	\$36,229,723	\$28,327,420	\$6,810,301	\$663,914	\$158,289	\$269,799
Supplies and materials.....	\$7,480,910	\$5,420,177	\$1,596,074	\$306,537	\$91,414	\$66,708
Fuel.....	\$2,431,350	\$1,456,184	\$846,963	\$94,479	\$10,749	\$22,975
Power.....	\$648,433	\$472,190	\$105,629	\$17,532	\$36,534	\$18,048
Royalties and rents.....	\$838,101	\$684,997	\$144,631	\$5,058	\$108	\$3,307
Taxes.....	\$1,699,030	\$1,252,773	\$409,293	\$8,334	\$19,990	\$9,240
Contract work.....	\$167,070	\$88,373	\$74,468	\$2,841	\$1,200	\$158
Expenditures for development (included in the above items).....	\$397,964	\$464,608	\$359,208	\$26,239	\$38,767	\$9,142
Value of products.....	\$59,866,040	\$45,359,441	\$12,291,760	\$1,340,961	\$337,425	\$536,453
Persons engaged in industry.....	34,632	26,162	6,877	901	208	484
Proprietors and firm members (total).....	41	33	2	3		2
Number performing manual labor.....	6	4	1			1
Salaried officers.....	248	219	8	6	4	11
Superintendents and managers.....	482	360	69	27	14	12
Technical employees.....	218	177	31	1	7	2
Clerks, etc.....	1,064	725	282	29	17	11
Wage earners (average number).....	32,579	24,648	6,485	835	166	445
Wage earners by occupation (Dec. 15):						
Above ground (total).....	9,862	6,104	2,320	793	297	343
Below ground (total).....	24,722	20,051	4,641	117		118
Foremen, shift bosses, etc.—						
Above ground.....	387	265	69	24	15	14
Below ground.....	543	400	139	2		2
Enginemakers, holstmen, electricians, mechanics, etc.—						
Above ground.....	2,793	1,912	683	136	21	41
Below ground.....	1,058	909	114	33		2
Miners, quarrymen, and drillmen, including their helpers—						
Above ground.....	887	402	136	166	49	124
Below ground.....	13,858	12,144	1,642	33		39
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—						
Above ground.....	1,332	919	206	171	25	11
Below ground.....	4,712	3,714	952	26		20
Muckers, loaders, laborers, and others not classified—						
Above ground.....	2,905	1,545	950	291	88	31
Below ground.....	4,751	2,884	1,794	23		50
Wage earners employed in mills and beneficiating plants—						
Above ground.....	1,558	1,061	276	5	99	117
Number of females included in wage earners reported above—						
Above ground.....	6	5			1	
Mineral land operated..... acres.....	723,306	652,793	65,208	4,171	3,410	2,224
Land controlled, total..... acres.....	832,198	701,760	117,628	4,658	3,416	4,728
Mineral land owned.....	636,368	563,894	64,631	3,991	3,410	442
Mineral land leased.....	93,278	90,739	577	180		1,782
Timber and other lands owned and leased.....	102,552	47,127	52,418	497	6	2,504
Power used: Aggregate horsepower.....	145,775	97,039	36,890	5,457	4,005	2,384
Prime movers (horsepower, total).....	92,657	59,017	28,720	3,930	210	789
Steam engines—						
Number.....	736	415	251	48	3	19
Horsepower.....	90,097	56,802	28,690	3,630	200	776
Steam turbines—						
Number.....	6	4		2		
Horsepower.....	1,667	1,367		300		
Internal-combustion engines—						
Number.....	34	30	1		1	2
Horsepower.....	819	774	30		10	5
Water wheels and turbines—						
Number.....	9	9				
Horsepower.....	74	74				
Purchased power (horsepower, total).....	53,118	38,022	8,170	1,527	3,795	1,604
Electric motors operated by purchased current—						
Number.....	1,147	868	105	26	91	67
Horsepower.....	53,118	38,022	8,170	1,527	3,795	1,604
Electric motors run by current generated by enterprise using:						
Number.....	701	671	26	4		
Horsepower.....	30,065	25,311	4,614	160		
Fuel used:						
Coal, bituminous..... tons, 2,000 pounds.....	761,268	509,815	217,263	28,640	1,684	3,866
Coke..... tons, 2,000 pounds.....	31,722	14,254	17,072	397		
Wood..... cords.....	1,965			30	685	1,250
Fuel oils..... barrels.....	410	360	50			
Gasoline and other volatile oils..... barrels.....	1,003	780			140	77

<sup>1</sup>Includes enterprises as follows: Barytes, 1; bauxite, 1; clay, 4; marble, 2; mica, 1; mineral pigments, 1; pyrite, 1; sandstone, 2.

# ALASKA.

**General statistics.**—The census of 1919 was the second to make an actual canvass of the mines and quarries in Alaska. As in the first census, covering the year 1909, the returns secured from the territory are incomplete, but they cover at least a representative number of enterprises in various industries.

The statistics cover 346 mining enterprises, 85.5 per cent of these being gold placer mines. The failure to secure complete returns in Alaska is due chiefly to conditions in the placer mining industry. This industry is seasonal and one in which the operators move from place to place. Many of them had moved out of the territory before the canvass began and, furthermore, many of the mines were in localities not easily accessible to the census agents, and difficult to reach by mail.

In addition to the number of returns tabulated, there were received from active concerns 97 returns not tabulated because they were defective or reported product valued at less than \$500, or were in operation for development only. Six of these last reported capital investment amounting to approximately \$900,000, employment of about 90 wage earners, and expenditures for development amounting to over \$350,000 for salaries, wages, supplies, fuel, and power.

The total value of products of all mining industries in Alaska, in 1919, as reported to the Bureau of the Census, was \$15,634,801.<sup>1</sup> Of this amount copper and gold lode mines, and deep mines producing other metals contributed \$11,516,565, or 73.7 per cent. The gold placers contributed \$3,565,489, or 22.8 per cent, which came chiefly from the mines, the product of these being valued at \$2,735,047; the remainder—\$830,442—was produced by dredges. The industry next in importance was coal mining, which produced \$333,912 worth of coal, or 2.1 per cent of the total. All other mining industries produced less than 2 per cent of the value of products for the industry as a whole.

The total value of products of all mining industries in Alaska canvassed by the Census Bureau was 80 per cent of the total value of production as reported for that territory by the United States Geological Survey. For the gold placer mining industry the corresponding percentage is 72. The discrepancy between the Census and Geological Survey figures is due partly to the fact that the Census Bureau reports the net value of the dust or bullion produced, whereas the Geological Survey reports gross value of the metals contained in the products, but is due chiefly to the fact that the Geological Survey (which cooperated with the Bureau of the Census in the canvass) was able to supplement the production statistics so derived by information from indirect sources,

through which, however, replies could not be obtained to those census inquiries not relating to product.

**Comparative summary.**—In Table 1 the principal statistics for all mining enterprises in the territory of Alaska in 1919 are summarized and compared with the statistics for 1909. The notable features brought out by this comparison are that whereas the value of products decreased only 7.7 per cent, the number of enterprises and the number of persons engaged in the mining industries in 1919 decreased approximately 43 and 35 per cent as compared with 1909 and, on the other hand, the capital invested increased approximately 250 per cent. These changes are merely the reflection of the changing character of the mining industry in the territory. Formerly, the industry was characterized by a large number of small bonanza gold placer mines, the operation of which employed little capital and many men, and which were the chief source of production. By 1919 placer mining, and particularly bonanza mining, had so declined and lode mining so increased that the industry in the territory was dominated by lode mining which employed large capital and relatively fewer persons per unit of output and had a production valued at nearly three-fourths the total value of all the mineral output. In addition to the change in character of mining, changes in commodity values also played an important part in the apparent decline of the industry and in impairing the comparability of 1909 and 1919 statistics.

**Character of organization.**—Table 2 classifies the producing enterprises of the territory according to character of organization, distinguishing the corporations from individual owners and firms (partnerships), and shows for all industries combined, and for the principal industries separately, the number of wage earners and the value of products for each class. The corporations, although forming only 11.6 per cent of the total number of enterprises, employed 66.2 per cent of all the wage earners and produced 82.2 per cent of the total value of all products. The separate figures for the principal industries show that the predominance of the corporations in these respects is confined to the lode mining industries.

**Size of enterprises.**—In Table 3 the producing enterprises are classified in six groups according to the number of wage earners employed. There were 123 enterprises, or 35.5 per cent of the total number, employing no wage earners; 194, or 56.1 per cent of the total, employing from 1 to 20 wage earners; and 5 large enterprises, or 1.4 per cent of the total, employing over 100 wage earners each. The enterprises in this last class are all lode mines.

**Persons employed in mining.**—As shown by Table 5, of the total of 3,267 persons employed in producing

<sup>1</sup> The gross value of all Alaskan mineral products in 1919, as estimated by the United States Geological Survey, was \$19,600,000.



enterprises in Alaska, copper and gold lode mines reported 1,887, or 57.8 per cent of the total number; and the gold placers 1,109, or 33.9 per cent. Of the 593 proprietors and firm members reported, 505, or approximately 85.1 per cent, performed manual labor in or about the mines. Of this number 30 were engaged in lode mining and 463 in placer mining.

**Number of wage earners employed, by months.**—Table 4 shows the number of wage earners employed on the 15th of each month, or nearest representative day, in the producing enterprises in all mining industries combined, and separately for the lode mines, placer mines, and coal mines. The seasonal control of placer mining is shown by the figures for gold and tin placers. It is even more marked than the figures indicate as all productive operations in dredging and other placer mining except drift mining is suspended during the winter months

**Power used.**—The detailed summary, Table 5, shows the aggregate horsepower used in producing mining enterprises in Alaska as 29,979, of which 29,829 horsepower was developed by steam engines and turbines, internal-combustion engines, and water wheels and turbines owned by the operators using them; and 150 horsepower by electric motors operated by purchased current. In the copper, gold, and other lode mines, 24,220 horsepower, or 80.8 per cent of the aggregate, was used, while in gold placer mining 4,717 horsepower was employed, 2,980 of which was used by placer mines proper and 1,737 by dredges. Of the total horsepower developed by prime movers, 58.2 per cent was by water wheels or turbines, and of this amount 97.8 per cent was used by copper and gold lode mines.

TABLE 1.—COMPARATIVE SUMMARY FOR PRODUCING ENTERPRISES: 1919 AND 1909.

	1919	1909		1919	1909
Number of enterprises.....	346	607	Capital.....	\$116,626,441	\$32,100,064
Number of mines and quarries.....	367	(1)	Expenses (selected items):		
Number of petroleum wells.....	8	(2)	Salaries.....	533,076	310,040
Persons engaged in industries.....	3,287	4,991	Wages.....	5,010,611	6,128,840
Proprietors and firm members, total.....	593	1,418	Supplies and materials.....	2,789,755	2,461,055
Number performing manual labor.....	505	411	Fuel and power.....	1,080,248	264,625
Salaried employees.....	199	173	Royalties and rents.....	314,066	1,526,495
Wage earners (average number).....	2,475	3,400	Taxes.....	307,390	6,855
Wage earners, Sept. 15.....	3,379	5,956	Contract work.....	457,774	1,638,388
Power used (horsepower).....	29,979	19,039	Value of products.....	15,634,801	16,933,427

<sup>1</sup> Figures not available.

TABLE 2.—CHARACTER OF ORGANIZATION, FOR PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products
<b>ALL INDUSTRIES.....</b>	346	3,379	\$15,634,801	\$45,187	100.0	100.0	100.0
Corporation.....	40	2,236	12,855,187	321,380	11.6	66.2	82.2
Individual.....	127	371	696,381	5,475	36.7	11.0	4.4
Firm <sup>1</sup> .....	179	772	2,084,233	11,644	51.7	22.8	13.3
<b>PLACER GOLD.....</b>	296	1,185	3,565,480	12,046	100.0	100.0	100.0
Corporation.....	16	296	1,292,264	80,766	5.4	25.1	36.2
Individual.....	117	284	539,267	4,609	39.5	24.0	15.1
Firm <sup>2</sup> .....	163	603	1,733,958	10,688	55.1	50.9	48.6
<b>COPPER, GOLD, AND OTHER LODGE MINES.....</b>	32	1,929	11,516,565	359,893	100.0	100.0	100.0
Corporation.....	16	1,821	11,329,066	708,067	50.0	94.4	98.4
Firm <sup>3</sup> .....	16	108	187,499	11,719	50.0	5.6	1.6

<sup>1</sup> Includes 2 cooperative associations and 2 unclassified.

<sup>2</sup> Includes 2 cooperative associations.

<sup>3</sup> Includes 5 individuals.

TABLE 3.—SIZE OF ENTERPRISES, BY NUMBER OF WAGE EARNERS PER ENTERPRISE: 1919.

WAGE EARNERS PER ENTERPRISE.	ALL INDUSTRIES.				PLACER GOLD.				COPPER, GOLD, AND OTHER LODGE MINES.			
	Enterprises.		Wage earners.		Enterprises.		Wage earners.		Enterprises.		Wage earners.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	346	100.0	3,379	100.0	296	100.0	1,185	100.0	32	100.0	1,929	100.0
No wage earners.....	123	35.5			112	37.8			8	25.0		
1 to 5.....	113	32.7	272	8.0	105	35.5	238	20.1	5	15.6	22	1.1
6 to 20.....	81	23.4	776	23.0	69	23.3	632	53.3	4	12.5	47	2.4
21 to 50.....	19	5.5	529	15.7	9	3.0	250	21.1	7	21.9	194	10.1
51 to 100.....	5	1.4	340	10.1	1	0.3	65	5.5	3	9.4	204	10.6
Over 100.....	5	1.4	1,462	43.3					5	15.6	1,462	75.8

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TABLE 4.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	2,475	2,197	<b>1,967</b>	2,022	2,085	2,308	2,774	2,942	<b>3,183</b>	3,044	2,532	2,361	2,350	63.4
Copper, gold, and other lode mining.....	1,723	1,813	1,549	1,548	1,502	<i>1,488</i>	1,547	1,595	1,764	1,796	2,014	2,039	<b>2,081</b>	68.6
Placer mining, total.....	538	178	204	249	379	660	983	1,107	1,098	1,014	365	132	87	7.9
Gold mines.....	427	161	185	222	287	545	821	908	967	799	210	77	75	8.3
Gold dredges.....	95	17	19	27	92	115	146	158	182	196	123	55	18	6.1
Tin placers.....	16						16	46	40	40	32			32.7
Coal.....	143	163	167	<b>169</b>	130	128	157	138	143	140	<i>118</i>	130	133	66.8
All other industries <sup>1</sup> .....	71	<i>45</i>	47	56	74	87	87	102	98	94	55	60	49	42.2

<sup>1</sup> Includes enterprises as follows: Chromite, 1; gypsum, 1; marble, 1; and petroleum, 1.

TABLE 5.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING MINES, QUARRIES, AND WELLS.						
	Total.	Copper, gold, and other lode mines.	Gold placers.		Coal.	Tin (placers).	All other. <sup>1</sup>
			Mines.	Dredges.			
Number of enterprises.....	346	32	279	17	8	6	4
Number of mines, quarries, and wells.....	375	33	296	18	8	7	11
Capital.....	\$116,626,441	\$106,612,540	\$5,997,427	\$2,736,984	\$276,683	\$189,796	\$513,011
Principal expenses:							
Salaries and wages—							
Officers.....	\$134,651	\$73,460	\$30,183	\$25,400		\$200	\$5,418
Superintendents and managers.....	\$241,497	\$180,055	\$46,710	\$24,215	\$5,100	\$3,000	\$12,417
Clerks and others.....	\$156,928	\$127,709	\$12,112	\$4,167	\$5,712		\$3,228
Wage earners.....	\$5,010,611	\$3,547,471	\$826,066	\$266,289	\$230,300	\$28,131	\$103,504
Supplies and materials.....	\$2,789,755	\$2,105,602	\$461,518	\$103,317	\$60,585	\$15,246	\$34,487
Fuel and power.....	\$1,080,348	\$765,661	\$163,328	\$111,452	\$13,086	\$4,707	\$32,104
Royalties and rents.....	\$314,066	\$58,305	\$175,385	\$69,179	\$70	\$15,777	\$400
Taxes.....	\$807,390	\$286,695	\$14,378	\$3,446	\$132	\$551	\$2,188
Contract work.....	\$457,774	\$453,474	\$300		\$4,000		
Expenditures for development (included in above).....	\$1,202,363	\$959,074	\$113,101	\$31,097	\$97,091	\$2,000	
Value of products.....	\$15,634,801	\$11,516,555	\$2,735,047	\$830,442	\$333,912	\$72,498	\$146,337
Persons engaged in industry.....	3,267	1,837	975	134	164	22	85
Proprietors and officials.....	702	96	539	36	15	6	19
Proprietors and firm members, total.....	598	42	515	20	12	2	2
Number performing manual labor.....	505	30	452	11	10	2	
Salaried officers of corporations.....	31	12	8	7		2	2
Superintendents and managers.....	78	42	16	9	3	2	6
Clerks and other salaried employees.....	90	68	9	3	6		4
Wage earners (average number).....	2,475	1,723	427	95	143	16	71
Wage earners, total number Sept. 15, or nearest representative day.....	3,379	1,929	989	196	163	49	53
Above ground.....	2,242	1,096	791	196	57	49	53
Below ground.....	1,137	833	198		106		
Women (included above).....	42	1	36	5			
Mineral and oil lands operated..... acres.....	46,551	13,027	23,932	3,450	2,059	2,250	1,842
Land controlled, total..... acres.....	46,766	13,122	24,052	3,450	2,060	2,250	1,842
Mineral and oil land owned.....	36,376	12,132	20,197	2,515	180	1,570	1,512
Mineral and oil land leased.....	8,175	895	3,765	635	1,879	680	330
Other lands.....	215	95	120				
Power used:							
Aggregate horsepower.....	29,979	24,220	2,980	1,737	152	330	560
Prime movers.....	29,829	24,070	2,980	1,737	152	330	560
Steam engines—							
Number.....	235	24	176	5	8	3	19
Horsepower.....	5,370	1,852	2,339	410	129	95	545
Steam turbines—							
Number.....	11	4	7				
Horsepower.....	2,438	2,450	43				
Internal-combustion engines—							
Number.....	74	27	8	29	6	3	1
Horsepower.....	4,599	2,776	223	1,327	23	235	15
Water wheels and turbines—							
Number.....	33	28	5				
Horsepower.....	17,367	16,992	375				
Electric motors operated by purchased current—							
Number.....	7	7					
Horsepower.....	150	150					
Electric motors run by current generated by the enterprise:							
Number.....	468	463	2		1		2
Horsepower.....	18,968	18,763	150		10		65
Fuel used:							
Coal, bituminous..... tons, 2,000 pounds.....	8,387	2,195	186	32	2,688	16	3,270
Wood..... cords.....	24,812	3,024	13,080	3,088	10		1,842
Fuel oils..... barrels.....	165,780	161,715	311	3,073		321	360
Gasoline and other volatile oils..... barrels.....	1,990	1,019	58	845	5	82	11

<sup>1</sup> Includes enterprises as follows: Chromite, 1; gypsum, 1; marble, 1; and petroleum, 1.

## ARIZONA.

Arizona, which ranks fifth among the states in size (land area 113,810 square miles) and forty-sixth in population (334,162 in 1920), ranked twelfth in value of mineral products for 1919. The state ranked sixteenth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross amount received for products by the operators of all mines and quarries in Arizona in 1919 was \$88,478,111, which includes a duplication of \$1,528,056, representing the value of copper ores sold by some producers and resold or used after treatment by others. Thus, the net value of products was \$86,950,055, which was an increase of 164.7 per cent over the corresponding figures, \$32,847,260, for 1909. The amount given as value of products includes \$752,152, which was received for mineral by-products, for custom milling, power sold, and miscellaneous services performed for other enterprises. The value of products reported for the precious and base metal mining industries in 1919 includes the net amounts received for ore concentrates, cement copper, and bullion, by mine and mill operators, or the estimated equivalent of sales value when the products were further treated and not sold, and does not represent the value of the metals produced or recoverable from these materials by smelting and refining. The preceding census of mines and quarries included statistics on smelters operated in connection with copper mines in Arizona and, therefore, the value of products and also other items relating to the copper industry in this state, reported for 1919 and 1909, are not entirely comparable.

The progress of mining in Arizona, during the census period 1909-1919, is shown in Table 1. It is better gauged by increases in number of enterprises, persons engaged in the industries, and average number of wage earners than by the large increases in the principal expenses and in the value of products which are largely due to general price increases.

The mining industries reported for 1919, ranked according to value of products, were those engaged in producing copper ores, gold and silver ores, asbestos, limestone, granite, lead and zinc ores, sandstone, gypsum, manganese ore, and gold from placer mines.

Mineral by-products were reported as follows: Manganese ore from a silver mine, silica from a limestone quarry, and rare metals (tungsten) from a copper mine.

The mining industries for which statistics can be shown without disclosure of individual operations are

ranked by value of products in Table 2, which also shows that in the less important industries different rank is determined by the per cent distribution of the average number of wage earners in each industry.

Copper is the leading mining industry in Arizona and in 1919, with a net value of products amounting to \$82,689,085, it represented 95.1 per cent of the net value of all mineral products in the state. Furthermore, Arizona ranks first among the states in the production of copper. The only other mineral industry of importance was gold and silver mining (lode mines) for which products valued at \$3,523,447 were reported. The metalliferous mines are widely distributed throughout the state, but were most important in 1919 in 12 districts, in Cochise, Gila, Greenlee, Pima, Pinal, and Yavapai Counties.

In addition to the operations of the producing mines and quarries, considerable work was done in Arizona on properties which were not productive during the year. Of these there were reported 95 enterprises engaged in developing 96 metalliferous lode mines, 1 of them a molybdenum mine, and the remainder copper, gold, silver, lead, or zinc mines. These enterprises, with a combined capital of over thirty million dollars, employed 798 wage earners and expended \$3,078,718 for development during the year, these figures representing approximately 5 per cent of the aggregate number of wage earners and of the aggregate expenditures reported for all mining operations of the state.

The extent of control of mining enterprises by corporate organizations is brought out by Table 3. Corporations conducted 63.2 per cent of all the mining enterprises in the state in 1919, employed 97.9 per cent of the average number of wage earners, and reported 99.3 per cent of the total value of products.

The relatively large number of small enterprises, as determined by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Arizona, 10.3 per cent had no wage earners and 74.1 per cent had fewer than 101 wage earners each, and these enterprises employed only 8.8 per cent of the total number of wage earners. On the other hand, enterprises employing more than 100 wage earners constituted only 15.5 per cent of the total number of enterprises, but employed 91.3 per cent of the total number of wage earners. The copper-mining industry included 87.5 per cent of these larger enterprises.

Table 5 shows that in more than half the mining enterprises employing wage earners the prevailing

hours of labor per week were 54 to 62, and in practically all the other enterprises 44 to 53. The 8-hour day prevailed generally, and the normal hours of labor per week were 56 in a majority of the mines and 48 in most of the remainder.

The statistics for wage earners in Table 6, showing the changes in employment month by month, reflect

conditions prevailing during the census year. The minima shown are probably abnormal, because of adverse metal market conditions and minor labor difficulties in some mining districts.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	155	135	14.8	Capital.....	\$402,419,671	\$119,772,781	236.0
Number of mines and quarries.....	172	251	-31.5	Principal expenses:			
Persons engaged.....	16,831	13,491	24.8	Salaries.....	3,750,829	1,018,180	269.2
Proprietors and firm members, total....	105	100	5.0	Wages.....	26,193,312	13,502,760	94.0
Number performing manual labor in or about the mines and quarries.....	68	61	.....	Contract work.....	746,783	238,082	212.5
Salaried employees.....	1,458	553	163.7	Supplies and materials <sup>2</sup> .....	16,160,891	6,029,758	133.2
Wage earners (average number).....	15,268	12,838	18.9	Fuel and power.....	5,377,825	5,603,989	-4.0
Power used (horsepower).....	166,091	47,272	251.4	Royalties and rents.....	438,926	8,256	.....
				Taxes.....	7,752,425	431,829	.....
				Value of products.....	83,478,111	34,217,651	158.6

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

<sup>2</sup> Includes cost of ore purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	155	15,268	100.0	\$88,478,111	100.0	Limestone.....	4	45	0.3	\$153,211	0.2
Copper.....	75	14,237	93.2	84,217,141	95.2	Granite.....	3	58	0.4	128,777	0.1
Gold and silver, lode mines.....	51	642	4.2	3,523,447	4.0	Lead and zinc.....	15	101	0.7	127,843	0.1
						All other industries <sup>1</sup> .....	7	185	1.2	327,692	0.4

<sup>1</sup> Includes enterprises in industries as follows: Asbestos, 2; gold, placer mines, 1; gypsum, 1; manganese, 1; sandstone, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	155	15,268	\$88,478,111	\$570,827	100.0	100.0	100.0
Corporation.....	98	14,946	87,877,574	896,710	63.2	97.9	99.3
Individual.....	26	213	355,317	13,666	16.8	1.4	0.4
Firm <sup>1</sup> .....	31	109	245,220	7,910	20.0	0.7	0.3
COPPER.....	75	14,237	84,217,141	1,122,896	100.0	100.0	100.0
Corporation.....	54	14,077	83,907,006	1,553,833	72.0	98.9	99.6
Individual.....	10	123	240,396	24,040	13.3	0.9	0.3
Firm <sup>1</sup> .....	11	37	69,739	6,340	14.7	0.3	0.1
GOLD AND SILVER, LODGE MINES.....	51	642	3,523,447	69,067	100.0	100.0	100.0
Corporation.....	26	595	3,395,007	130,577	51.0	92.7	96.4
Individual.....	9	21	15,113	1,679	17.6	3.3	0.4
Firm.....	16	26	118,327	7,063	31.4	4.0	3.2
LEAD AND ZINC.....	15	101	127,843	8,523	100.0	100.0	100.0
Corporation.....	7	61	76,783	10,969	46.7	60.4	60.1
Individual <sup>2</sup> .....	8	40	51,060	6,353	33.3	39.6	39.9

<sup>1</sup> Includes 1 other form of organization.

<sup>2</sup> Includes 2 firms.

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TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES.....</b>	<b>155</b>	<b>100.0</b>	<b>15,268</b>	<b>100.0</b>	<b>GOLD AND SILVER, LOBE MINES.....</b>	<b>51</b>	<b>100.0</b>	<b>642</b>	<b>100.0</b>
No wage earners.....	16	10.3			No wage earners.....	8	15.7		
1 to 5.....	56	36.1	135	0.9	1 to 5.....	23	45.1	46	7.2
6 to 20.....	36	23.2	390	2.6	6 to 20.....	14	27.5	126	21.2
21 to 50.....	21	13.5	649	4.2	21 to 50.....	4	7.8	135	21.0
51 to 100.....	2	1.3	167	1.1	101 to 500.....	2	3.9	325	50.6
101 to 500.....	15	9.7	4,714	30.9					
501 to 1,000.....	5	3.2	3,917	25.7	<b>LEAD AND ZINC.....</b>	<b>15</b>	<b>100.0</b>	<b>101</b>	<b>100.0</b>
Over 1,000.....	4	2.6	5,296	34.7	No wage earners.....	2	13.3		
<b>COPPER.....</b>	<b>75</b>	<b>100.0</b>	<b>14,237</b>	<b>100.0</b>	1 to 5.....	6	40.0	11	10.9
No wage earners.....	4	5.3			6 to 20.....	7	46.7	90	89.1
1 to 5.....	23	30.7	62	0.4					
6 to 20.....	12	16.0	125	0.9					
21 to 50.....	13	17.3	388	2.7					
51 to 100.....	2	2.7	167	1.2					
101 to 500.....	12	16.0	4,282	30.1					
501 to 1,000.....	5	6.7	3,917	27.5					
Over 1,000.....	4	5.3	5,296	37.2					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
	Enterprises.	Wage earners.	36 to 42.		44 to 53.		54 to 62.		63 to 71.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
<b>All industries.....</b>	<b>139</b>	<b>15,268</b>	<b>1</b>	<b>107</b>	<b>51</b>	<b>6,981</b>	<b>86</b>	<b>8,178</b>	<b>1</b>	<b>2</b>
Copper.....	71	14,237			32	6,787	39	7,450		
Gold and silver, lode mines.....	43	642			5	27	37	613	1	2
Lead and zinc.....	13	101			6	45	7	56		
All other industries.....	12	288	1	107	3	122	3	59		

<sup>1</sup> Exclusive of 16 enterprises employing no wage earners in industries as follows: Copper, 4; gold and silver, lode mines, 8; lead and zinc, 2; limestone, 2.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries.....</b>	<b>16,066</b>	<b>19,702</b>	<b>16,841</b>	<b>14,073</b>	<b>15,613</b>	<b>14,010</b>	<b>14,159</b>	<b>15,258</b>	<b>16,497</b>	<b>16,064</b>	<b>17,320</b>	<b>17,295</b>	<b>17,160</b>	<b>68.6</b>
Producing enterprises.....	15,268	19,065	16,273	13,358	15,808	13,199	13,290	14,366	15,583	16,036	16,441	16,494	16,318	67.2
Copper.....	14,237	18,079	15,347	12,406	11,840	12,200	12,322	13,337	14,610	14,925	15,243	15,204	15,241	65.5
Gold and silver, lode mines.....	642	607	580	579	581	628	655	710	580	658	739	710	668	78.3
Lead and zinc.....	101	158	111	115	127	98	85	82	86	89	84	90	93	53.9
Granite.....	58	96	96	118	118	80	28	26	26	28	28	28	26	23.2
Limestone.....	45	78	54	51	32	42	36	41	42	47	44	45	28	35.9
All other industries.....	135	51	85	95	116	151	154	170	235	201	303	317	262	16.1
Nonproducing enterprises.....	798	637	568	715	705	811	879	892	909	928	879	811	942	61.2

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TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.							Non-producing enterprises. <sup>1</sup>
		Total.	Copper.	Gold and silver, lode mines.	Limestone.	Granite.	Lead and zinc.	All other. <sup>1</sup>	
Number of enterprises.....	250	155	75	51	4	3	15	7	95
Number of mines and quarries.....	268	172	89	51	4	5	16	7	96
Capital.....	\$432,634,662	\$402,419,671	\$387,759,328	\$12,986,527	\$108,810	\$62,400	\$1,011,764	\$540,842	\$30,214,991
Principal expenses:									
Salaries and wages—									
Officers.....	\$522,396	\$463,262	\$418,054	\$33,159	.....	\$3,000	\$6,950	\$1,500	\$39,333
Superintendents and managers.....	\$1,262,241	\$1,094,179	\$989,048	\$62,453	\$6,000	.....	\$22,091	\$13,988	\$168,023
Technical employees.....	\$923,467	\$908,383	\$881,383	\$21,741	.....	.....	.....	\$5,390	\$15,374
Clerks, etc.....	\$1,324,473	\$1,293,504	\$1,249,797	\$33,701	\$2,300	.....	\$2,398	\$5,318	\$30,909
Wage earners.....	\$27,420,965	\$26,193,112	\$24,855,574	\$684,826	\$41,941	\$75,894	\$114,651	\$120,424	\$1,237,673
Supplies and materials.....	\$15,758,176	\$14,632,325	\$13,454,478	\$1,018,012	\$16,090	\$14,624	\$39,344	\$40,292	\$1,126,341
Cost of ore purchased.....	\$1,528,056	\$1,528,056	\$1,528,056	.....	.....	.....	.....	.....	.....
Fuel.....	\$4,293,533	\$4,132,267	\$4,034,905	\$64,091	\$1,152	\$9,284	\$10,896	\$12,229	\$161,276
Power.....	\$1,340,232	\$1,245,268	\$1,161,070	\$74,388	\$7,310	\$1,900	.....	.....	\$94,994
Royalties and rents.....	\$440,621	\$438,926	\$383,213	\$30,297	.....	\$2,490	\$2,472	\$464	\$1,695
Taxes.....	\$7,779,326	\$7,752,426	\$7,568,314	\$175,095	\$122	\$177	\$3,156	\$5,561	\$27,401
Contract work.....	\$966,808	\$746,783	\$292,123	\$366,813	\$70,357	.....	\$17,490	.....	\$219,820
Expenditures for development (included in the above items).....	\$10,312,106	\$7,233,390	\$6,396,094	\$659,105	\$47,580	.....	\$101,006	\$32,605	\$3,078,718
Value of products.....	\$88,478,111	\$88,478,111	\$84,217,141	\$3,523,447	\$153,211	\$128,777	\$127,843	\$327,692	.....
Persons engaged in industry.....	17,783	16,831	15,634	754	48	61	129	205	965
Proprietors and firm members (total).....	110	105	37	50	9	.....	13	4	2
Number performing manual labor.....	71	68	22	38	.....	.....	8	.....	3
Salaried officers.....	124	94	76	11	.....	3	3	1	40
Superintendents and managers.....	364	300	264	21	1	.....	8	6	64
Technical employees.....	406	393	383	7	.....	.....	.....	3	13
Clerks, etc.....	708	671	637	23	1	.....	4	6	32
Wage earners (average number).....	16,066	15,268	14,237	642	45	58	101	185	798
Wage earners by occupation (Dec. 15):									
Above ground (total).....	7,653	7,231	6,702	196	28	82	34	187	432
Below ground (total).....	10,564	9,801	9,028	544	.....	.....	127	102	763
Foremen, shift bosses, etc.—									
Above ground.....	296	261	215	34	2	4	2	4	25
Below ground.....	379	330	297	22	.....	.....	9	2	49
Enginemen, holstmen, electricians, mechanics, etc.—									
Above ground.....	2,439	2,261	2,158	61	2	10	12	18	188
Below ground.....	582	542	514	27	.....	.....	1	.....	40
Miners, quarrymen, and drillmen, including their helpers—									
Above ground.....	909	890	806	24	16	18	8	13	29
Below ground.....	3,948	3,582	3,151	264	.....	.....	45	72	416
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—									
Above ground.....	288	219	201	8	.....	10	.....	.....	39
Below ground.....	2,608	2,559	2,434	92	.....	.....	25	8	44
Muckers, loaders, laborers, and others not classified—									
Above ground.....	2,284	2,088	1,864	41	8	40	7	183	141
Below ground.....	3,052	2,838	2,632	130	.....	.....	47	20	214
Wage earners employed in mills and beneficiating plants—									
Above ground.....	1,537	1,527	1,458	40	.....	.....	10	19	.....
Number of females included in wage earners reported above—									
Above ground.....	17	8	3	5	.....	.....	.....	.....	9
Mineral land operated..... acres.....	106,932	70,431	50,136	10,175	688	232	4,575	4,625	36,501
Land controlled, total..... acres.....	134,599	87,759	67,414	10,175	688	232	4,576	4,625	36,840
Mineral land owned.....	91,694	56,982	41,500	7,928	688	83	2,383	4,380	34,733
Mineral land leased.....	15,238	13,469	8,686	2,247	.....	149	2,192	245	1,789
Timber and other lands owned and leased.....	17,667	17,308	17,278	.....	.....	50	.....	.....	339
Power used: Aggregate horsepower.....	175,370	166,091	158,614	5,107	255	417	634	1,064	9,279
Prime movers (horsepower, total).....	144,636	138,539	133,763	2,763	55	263	634	1,064	6,107
Steam engines—									
Number.....	277	262	233	17	.....	3	2	7	15
Horsepower.....	53,800	52,634	50,778	1,601	.....	40	65	150	1,166
Steam turbines—									
Number.....	21	21	21	.....	.....	.....	.....	.....	.....
Horsepower.....	73,037	73,037	73,037	.....	.....	.....	.....	.....	.....
Internal-combustion engines—									
Number.....	287	166	64	61	2	6	18	15	131
Horsepower.....	17,799	13,858	9,947	1,161	55	212	569	914	4,941
Purchased power (horsepower, total).....	30,734	27,552	24,852	2,345	209	165	.....	.....	3,172
Electric motors operated by purchased current—									
Number.....	690	632	526	98	3	3	.....	.....	88
Horsepower.....	29,719	26,547	23,837	2,345	200	165	.....	.....	3,172
Other equipment operated by purchased power—									
Horsepower.....	1,015	1,015	1,015	.....	.....	.....	.....	.....	.....
Electric motors run by current generated by enterprise using:									
Number.....	1,166	1,155	1,139	5	.....	.....	.....	11	10
Horsepower.....	77,718	77,545	77,126	32	.....	.....	.....	387	173
Fuel used:									
Coal, bituminous..... tons, 2,000 pounds.....	88,330	84,988	83,429	297	.....	.....	2	1,210	268
Coke..... tons, 2,000 pounds.....	174	174	174	.....	.....	.....	.....	.....	.....
Wood..... cords.....	2,551	1,602	20	1,508	.....	36	.....	38	949
Fuel oils..... barrels.....	1,301,290	1,279,173	1,258,708	10,687	236	6,096	85	3,361	22,117
Gasoline and other volatile oils..... barrels.....	18,735	6,706	2,473	2,763	17	251	982	230	7,029

<sup>1</sup> Includes enterprises as follows: Asbestos, 2; gold, placer mines, 1; gypsum, 1; manganese, 1; sandstone, 2.  
<sup>2</sup> Includes enterprises as follows: Gold, silver, copper, lead, or zinc, 94; molybdenum, 1.

## ARKANSAS.

Arkansas, which ranks twenty-sixth among the states in size (land area 52,525 square miles) and twenty-fifth in population (1,752,204 in 1920), ranked thirty-fourth in value of mineral products for 1919. The state ranked thirtieth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross amount received for products by operators of all mines, quarries, and wells in Arkansas in 1919 was \$8,404,537, an increase of 82.6 per cent as compared with the corresponding amount reported at the census of 1909. The amount reported for value of products for 1919 included a duplication of \$165,786, the value of natural gas sold by some producers to other producers who distributed this gas and again reported its value. After eliminating this duplication the net value of products for the year 1919 was \$8,238,751, an increase of 79 per cent over the value of products reported for 1909. The value of products for 1919 includes small amounts received for power sold or for work or miscellaneous services for other enterprises.

The increases in value of products, wages, cost of supplies and materials and fuel and power, as shown in Table 1, are largely due to general price increases during the census interval and therefore are not a fair measure of the growth of mining. The decrease in the number of mines and quarries operated and in the average number of wage earners employed indicates an actual decrease in the mining industries in 1919 as compared with 1909.

The mining industries reported for 1919, classified by principal products and listed in order of value of products, were bituminous coal, bauxite, natural gas, sandstone, limestone, lead and zinc, granite, abrasive materials, manganese ore, and iron ore. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mining industry in Arkansas in 1919 was bituminous coal mining in Franklin, Johnson, Logan, Pope, Scott, and Sebastian Counties. Most of the coal produced in this region is a semianthracite. The coal-mining industry reported 85 out of a total of 126 mining enterprises in the state, employed 76.8 per cent of the total number of wage earners, and reported products valued at \$5,292,274, or 63 per cent of the total value of products.

The mining industry second in importance in Arkansas was bauxite mining, in Pulaski and Saline Counties. Arkansas ranked first in the United States

in the production of bauxite. The statistics for this industry are not shown separately in order to avoid disclosure of individual operations.

The industry third in importance, as measured by value of products for 1919, was production of natural gas in Crawford, Sebastian, and Scott Counties.

In addition to the productive mining operations, some work was done for the purpose of developing a manganese mine and a petroleum and natural-gas property. These data, however, can not be shown.

The character of organizations conducting mining enterprises in Arkansas is shown in Table 3, which brings out the preponderance of corporations over other forms of organization. Corporations operated 59.5 per cent of the total number of enterprises, employed 82.6 per cent of the total number of wage earners, and reported products valued at \$7,237,057, or 86.1 per cent of the total value of all products.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the 120 mining enterprises employing wage earners 115 had fewer than 101 each, and these enterprises employed 67.1 per cent of the total number of wage earners. On the other hand, only 5 enterprises, which had more than 100 wage earners each, employed 33 per cent of the total number. The larger enterprises were in the coal and bauxite mining industries.

Table 5 shows that in more than half of the enterprises employing wage earners and for 55.9 per cent of the wage earners in Arkansas in 1919 the hours of labor were 44 to 53 per week. The remaining numbers, however, of enterprises and wage earners were fairly evenly divided between those enterprises reporting longer and those reporting shorter hours. In the coal-mining industry the 8-hour day and 6-day week was the rule, but a shorter week was reported by nearly one-third of the enterprises and for more than one-fourth of the wage earners. In the other mining and in the quarrying industries most of the wage earners worked 9 or 10 hours per day and 6 days per week.

The statistics for wage earners presented in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The minimum in the coal industry reported in November was due to the great strike and resulted in a similar minimum in the figures for all industries combined.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	126	96	—	Capital.....	\$8,688,453	\$7,200,417	20.7
Number of mines and quarries.....	126	146	-13.7	Principal expenses:			
Number of natural-gas wells.....	124	62	—	Salaries.....	601,827	238,467	152.4
Persons engaged.....	4,073	5,252	-22.4	Wages.....	4,573,291	3,026,140	51.1
Proprietors and firm members, total.....	109	75	—	Contract work.....	139,434	117,195	19.0
Number performing manual labor in or about the mines, quarries, and wells.....	68	41	—	Supplies and materials.....	<sup>2</sup> 1,461,512	368,207	280.6
Salaried employees.....	334	242	38.0	Fuel and power.....	441,261	138,987	217.5
Wage earners (average number).....	3,630	4,935	-26.4	Royalties and rents.....	386,925	193,990	99.5
Power used (horsepower).....	21,365	14,060	51.7	Taxes.....	174,443	18,084	864.6
				Value of products.....	8,404,537	4,603,845	82.6

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.  
<sup>2</sup> Includes cost of natural gas purchased for resale.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	126	3,630	100.0	\$8,404,537	100.0	Limestone.....	6	114	3.1	\$220,070	2.6
Coal, bituminous.....	85	2,787	76.8	5,292,274	63.0	Lead and zinc.....	11	28	0.8	14,595	0.2
Natural gas.....	7	16	0.4	621,834	7.4	All other industries <sup>1</sup> .....	17	685	18.9	2,255,764	26.8

<sup>1</sup> Includes enterprises in industries as follows: Abrasive materials, 1; bauxite, 4; granite, 2; iron ore, 1; manganese, 2; sandstone, 7.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	126	3,630	\$8,404,537	\$66,703	100.0	100.0	100.0
Corporation.....	75	2,998	7,237,057	96,494	59.5	82.6	86.1
Individual.....	23	245	422,588	18,373	18.3	6.7	5.0
Firm <sup>1</sup> .....	28	387	744,892	26,603	22.2	10.7	8.9
COAL, BITUMINOUS.....	85	2,787	5,292,274	62,262	100.0	100.0	100.0
Corporation.....	49	2,269	4,314,407	88,049	57.6	81.1	81.5
Individual.....	15	194	282,405	18,827	17.6	7.0	5.3
Firm <sup>2</sup> .....	21	334	695,462	33,117	24.7	12.0	13.1
NATURAL GAS.....	7	16	621,834	88,833	100.0	100.0	100.0
Corporation.....	7	16	621,834	88,833	100.0	100.0	100.0
LIMESTONE.....	6	114	220,070	36,678	100.0	100.0	100.0
Corporation.....	3	68	108,081	36,027	50.0	59.6	49.1
Individual <sup>3</sup> .....	3	46	111,989	37,330	50.0	40.4	50.9
LEAD AND ZINC.....	11	28	14,595	1,327	100.0	100.0	100.0
Corporation.....	7	22	9,405	1,344	63.6	78.6	64.4
Firm <sup>4</sup> .....	4	6	5,190	1,298	36.4	21.4	35.6

<sup>1</sup> Includes 2 other forms of organization.

<sup>2</sup> Includes 1 other form of organization.

<sup>3</sup> Includes 1 firm.

<sup>4</sup> Includes 1 individual.



## MINES AND QUARRIES—ARKANSAS.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	<b>126</b>	<b>100.0</b>	<b>3,630</b>	<b>100.0</b>	<b>LIMESTONE</b> .....	<b>6</b>	<b>100.0</b>	<b>114</b>	<b>100.0</b>
No wage earners.....	6	4.8	.....	.....	1 to 5.....	1	16.7	5	4.4
1 to 5.....	35	27.8	86	2.4	6 to 20.....	3	50.0	46	40.4
6 to 20.....	39	31.0	427	11.8	21 to 50.....	2	33.3	63	55.3
21 to 50.....	27	21.4	925	25.5					
51 to 100.....	14	11.1	995	27.4					
101 to 500.....	5	4.0	1,197	33.0					
<b>COAL, BITUMINOUS</b> .....	<b>85</b>	<b>100.0</b>	<b>2,787</b>	<b>100.0</b>					
1 to 5.....	18	21.2	42	1.5					
6 to 20.....	28	32.9	311	11.2					
21 to 50.....	22	25.9	758	27.2					
51 to 100.....	13	15.3	897	32.2					
101 to 500.....	4	4.7	779	28.0					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
<b>All industries</b> .....	<b>120</b>	<b>3,630</b>	<b>2</b>	<b>69</b>	<b>27</b>	<b>731</b>	<b>65</b>	<b>2,029</b>	<b>26</b>	<b>801</b>
Coal, bituminous.....	85	2,787	2	69	25	720	57	1,979	1	19
Limestone.....	6	114	.....	.....	.....	.....	1	20	5	94
All other industries.....	29	729	.....	.....	2	11	7	30	20	683

<sup>1</sup> Exclusive of 6 enterprises employing no wage earners in industries as follows: Iron ore, 1; lead and zinc, 1; natural gas, 4.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italics* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries</b> .....	<b>3,630</b>	<b>3,783</b>	<b>3,404</b>	<b>3,224</b>	<b>3,141</b>	<b>3,240</b>	<b>3,288</b>	<b>4,062</b>	<b>4,542</b>	<b>4,879</b>	<b>4,760</b>	<b>1,416</b>	<b>3,821</b>	<b>29.0</b>
Coal, bituminous.....	2,787	2,944	2,662	2,490	2,332	2,483	2,549	3,307	3,635	3,918	3,859	474	2,801	13.1
Limestone.....	114	73	80	92	96	122	128	131	138	149	131	116	121	52.1
Lead and zinc.....	25	49	42	35	36	35	40	37	27	12	14	14	6	10.2
Natural gas.....	16	16	16	16	16	15	15	15	15	17	18	19	22	59.1
All other industries.....	656	701	614	591	661	557	558	584	729	792	738	793	873	64.0

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TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.					
	Total.	Coal, bituminous.	Natural gas.	Limestone.	Lead and zinc.	All other. <sup>1</sup>
Number of enterprises.....	126	85	7	6	11	17
Number of mines and quarries.....	126	91		6	11	18
Number of natural-gas wells.....	124		124			
<b>Capital</b> .....	<b>\$8,688,453</b>	<b>\$3,628,278</b>	<b>\$2,080,388</b>	<b>\$737,167</b>	<b>\$228,500</b>	<b>\$2,006,120</b>
<b>Principal expenses:</b>						
<b>Salaries and wages—</b>						
Officers.....	\$153,138	\$88,171	\$14,000	\$15,300	\$4,000	\$31,667
Superintendents and managers.....	\$265,106	\$188,622	\$8,000	\$17,449	\$3,420	\$45,964
Technical employees.....	\$23,373	\$8,198	\$5,480			\$9,697
Clerks, etc.....	\$160,311	\$89,287	\$8,280	\$1,920	\$600	\$54,324
Wage earners.....	\$4,573,391	\$3,475,619	\$26,583	\$62,009	\$17,935	\$961,735
<b>Supplies and materials.....</b>	<b>\$1,235,728</b>	<b>\$716,615</b>	<b>\$75,091</b>	<b>\$52,498</b>	<b>\$10,310</b>	<b>\$380,612</b>
<b>Cost of natural gas purchased for resale.....</b>	<b>\$165,786</b>		<b>\$165,786</b>			
<b>Fuel.....</b>	<b>\$330,146</b>	<b>\$171,596</b>	<b>\$9,516</b>	<b>\$18,372</b>	<b>\$1,794</b>	<b>\$181,672</b>
<b>Power.....</b>	<b>\$111,115</b>	<b>\$95,649</b>		<b>\$600</b>		<b>\$14,866</b>
<b>Royalties and rents.....</b>	<b>\$386,725</b>	<b>\$184,207</b>	<b>\$44,771</b>	<b>\$10,540</b>	<b>\$2,018</b>	<b>\$145,389</b>
<b>Taxes.....</b>	<b>\$174,443</b>	<b>\$57,476</b>	<b>\$14,475</b>	<b>\$2,966</b>	<b>\$790</b>	<b>\$98,737</b>
<b>Contract work.....</b>	<b>\$139,434</b>	<b>\$56,651</b>	<b>\$88,000</b>			<b>\$78</b>
<b>Expenditures for development (included in the above items).....</b>	<b>\$431,908</b>	<b>\$270,610</b>	<b>\$144,134</b>		<b>\$3,500</b>	<b>\$13,664</b>
<b>Value of products.....</b>	<b>\$8,404,537</b>	<b>\$5,292,274</b>	<b>\$621,634</b>	<b>\$220,070</b>	<b>\$14,596</b>	<b>\$2,255,764</b>
<b>Persons engaged in industry.....</b>	<b>4,073</b>	<b>3,095</b>	<b>40</b>	<b>139</b>	<b>45</b>	<b>754</b>
Proprietors and firm members (total).....	109	78		10	7	9
Number performing manual labor.....	68	63			3	2
Salaried officers.....	59	36	8	7	2	6
Superintendents and managers.....	124	94	4	6	2	18
Technical employees.....	15	4	7			4
Clerks, etc.....	136	96	5	2	1	32
Wage earners (average number).....	3,630	2,787	16	114	28	688
<b>Wage earners by occupation (Dec. 15):</b>						
Above ground (total).....	1,885	799	19	126	30	917
Below ground (total).....	3,261	3,208			58	
<b>Foremen, shift bosses, etc.—</b>						
Above ground.....	74	28		9	3	34
Below ground.....	57	51			6	
<b>Engineers, hoistmen, electricians, mechanics, etc.—</b>						
Above ground.....	364	251	15	19	5	74
Below ground.....	26	26				
<b>Miners, quarrymen, and drillmen, including their helpers—</b>						
Above ground.....	727	238		35		454
Below ground.....	2,356	2,307			49	
<b>Timbermen, trackmen, and men engaged in hauling, tramping, etc.—</b>						
Above ground.....	206	162		2	3	99
Below ground.....	450	449			1	
<b>Muckers, loaders, laborers, and others not classified—</b>						
Above ground.....	384	148	4	57		175
Below ground.....	373	370			2	
<b>Wage earners employed in mills and beneficiating plants—</b>						
Above ground.....	130	26		4	19	81
<b>Mineral and gas land operated..... acres</b>	<b>76,416</b>	<b>24,421</b>	<b>46,621</b>	<b>2,622</b>	<b>1,028</b>	<b>1,794</b>
<b>Land controlled, total..... acres</b>	<b>91,406</b>	<b>25,323</b>	<b>46,621</b>	<b>4,222</b>	<b>1,028</b>	<b>14,215</b>
Mineral and gas land owned.....	18,181	12,226	2,700	2,295	343	615
Mineral and gas land leased.....	58,315	12,770	43,921	327	686	1,111
Timber and other lands owned and leased.....	14,912	826		1,600		12,489
<b>Power used: Aggregate horsepower.....</b>	<b>21,365</b>	<b>15,027</b>	<b>617</b>	<b>1,158</b>	<b>547</b>	<b>4,016</b>
Prime movers (horsepower, total).....	15,562	10,189	617	1,133	547	3,098
<b>Steam engines—</b>						
Number.....	174	130	3	12	4	25
Horsepower.....	13,008	10,008	210	1,130	270	1,360
<b>Internal-combustion engines—</b>						
Number.....	39	18	4	1	6	10
Horsepower.....	2,549	156	407	3	277	1,708
<b>Purchased power (horsepower, total).....</b>	<b>5,813</b>	<b>4,898</b>		<b>25</b>		<b>920</b>
Electric motors operated by purchased current—						
Number.....	141	130		3		8
Horsepower.....	5,813	4,898		25		920
<b>Electric motors run by current generated by enterprise using:</b>						
Number.....	124	25	1	4		94
Horsepower.....	3,184	601	12	7		2,564
<b>Fuel used:</b>						
Coal, bituminous..... tons, 2,000 pounds.....	74,238	58,978		3,301	6	11,953
Wood..... cords.....	3,020	5	1,200	550	246	1,019
Fuel oils..... barrels.....	583	63			195	578
Gasoline and other volatile oils..... barrels.....	667	135		10		822
Natural gas..... 1,000 cubic feet.....	328,067		52,080			276,977

<sup>1</sup> Includes enterprises as follows: Abrasive materials, 1; bauxite, 4; granite, 3; iron ore, 1; manganese ore, 2; sandstone, 7.

## CALIFORNIA.

California, which ranks second among the states in size (land area 155,652 square miles) and eighth in population (3,426,861 in 1920), ranked fifth in value of mineral products for 1919. The state ranked eleventh in the total number of persons engaged in the mining industries and tenth in the average number of wage earners employed. California reported 29 productive mineral industries, a greater number than was reported by any other state.

The gross amount received for products by the operators of all mines, quarries, and wells in California in 1919 was \$163,770,243, and in 1909 was \$63,382,454. After eliminating duplication of \$875,751, the value of gold and silver ores, magnesite, and natural gas sold in 1919 by some producers to others and again reported after further treatment and resale, and, for 1909, a similar duplication of \$2,762,660 in the value of gold and silver ores, copper ores, and natural gas, the net value of products for 1919 is \$162,894,492, and for 1909 is \$60,619,794, an increase of 168.7 per cent. The figures for 1919 include receipts for mineral and other unspecified by-products, custom milling, power sold, and work or miscellaneous services for other enterprises which amounted to \$1,082,885. As the significance of amounts reported in dollars is impaired for purposes of comparison by general price increases during the decade, the increase in amount received for products does not, nor do the increases in wages, cost of supplies and materials, fuel and power, and capital invested, as shown in Table 1, correctly indicate the growth or progress of mining in California during the census period 1909 to 1919. The number of wage earners probably serves better for comparison of the mining industries as a whole for the years 1909 and 1919, and on this basis there was slight decrease for the mining industries of the state. This, however, is due to heavy decreases in the metal mining and quarrying activities partly offset by a notable increase in the petroleum and natural-gas industry. The addition of Federal income and excess-profits taxes since 1909 will account for the increase in taxes.

The industries reported for 1919, classified by principal products and listed in the order of value of products, were petroleum and natural gas, gold and silver from lode mines, gold from placer mines, copper, quicksilver, pyrite, magnesite, basalt or traprock, granite, limestone, lead and zinc, manganese ore, ores of rare metals (tungsten), clay, talc and soapstone, sandstone, abrasive materials, chromite, marble, gypsum, graphite, barytes, asphalt, iron ore, mineral pigments, asbestos, coal, silica, and feldspar.

The mining industries for which the statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mineral industry in California in 1919, petroleum and natural gas production, reported a majority of the enterprises in the state, 63.8 per cent of the total number of wage earners, and products valued at \$139,018,663, representing 84.9 per cent of the total value of products of all mining industries in the state. California ranked third among the states in value of products of the petroleum and natural-gas industry. Production was reported principally from Fresno, Kern, Los Angeles, Orange, Santa Barbara, and Ventura Counties, but also from Sacramento, San Luis Obispo, San Joaquin, and Solano Counties.

The mining and milling of gold and silver bearing ores was second in importance in the state, and California ranked third among the states in this industry in 1919, reporting products valued by the producers at \$8,773,757. The statistics for this industry include figures for custom and merchant reduction mills and the operations on old dumps and tailings. Production was reported from 21 counties chiefly in the east-central and northern parts of the state.

Placer mining was third in rank in 1919 among the mining industries of California which was the premier state in the industry with an output valued at \$7,937,654. The productive counties were Amador, Butte, Calaveras, Eldorado, Nevada, Placer, Plumas, San Joaquin, Sacramento, Shasta, Sierra, Siskiyou, Stanislaus, Trinity, and Yuba.

The mining industries in the state, fourth and fifth, respectively, in importance, were copper mining with value of products \$2,397,610, California ranking seventh in the United States, and quicksilver production, with value of products of \$1,217,077 and California holding first place. In several of the minor mineral industries also, California stands high, ranking, on the basis of value of products in 1919, first in chromite mining, second in production of rare metals and of magnesite, and fourth in manganese, abrasive materials, and talc and soapstone.

In addition to the operation of the producing mines and quarries considerable work was done in California on properties which were not productive during the year. Sixty such enterprises were reported, 47 in metal-mining industries and 13 in the petroleum and natural-gas industry. These enterprises, with a combined capital of \$13,494,898, employed 403 wage earners and expended \$1,512,352 for development during the year, these figures representing 2 per cent of the aggregate number of wage earners and 1.5 per cent of the aggregate expenditures reported for all mining operations in the state.

The form or character of organizations conducting mining enterprises in California in 1919 is shown in Table 3 which brings out the preponderance of incorporated enterprises. Corporations operated 67.9 per cent of all the mining enterprises, employed 94.9 per cent of the average number of wage earners, and reported 96.3 per cent of the total value of products. Table 3 also shows that corporate organizations virtually controlled the petroleum and natural-gas industry and that, although they were less important as to number of enterprises in the metal-mining and quarrying industries, nevertheless they conducted the enterprises which were, on the basis of number of wage earners and value of products, the more important.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in California, 95 per cent were in classes having no wage earners or fewer than 101, and such enterprises employed 47.8 per cent of the total number of wage earners. On the other hand, only 5 per cent of the total number of enterprises

had more than 100 wage earners each and these enterprises employed 52.2 per cent of the total number of wage earners. In Table 4, the 6 largest enterprises are shown in the petroleum and natural-gas industry, but the table is based on reports for that industry which consolidated data on operations in several localities in which the individual operations were of smaller size.

Table 5 shows that for nearly three-fourths of the enterprises employing wage earners and of the number of wage earners in all the mining industries in California in 1919, the hours of labor were 54 to 62 per week. The 8-hour day and 7-day week prevailed. Hours of labor ranging from 44 to 53 per week, indicating the 8-hour day and 6-day week, were reported for practically all other enterprises.

The statistics for wage earners presented in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the mining industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	725	1,329	-45.4	Capital.....	\$446,782,385	\$258,577,552	76.2
Number of mines and quarries.....	357	1,279	-72.1	Principal expenses:			
Number of petroleum and natural-gas wells.....	9,197	4,316	112.1	Salaries.....	5,141,550	2,968,779	73.2
Number of natural-gas gasoline plants.....	58	( <sup>2</sup> )	.....	Wages.....	31,748,170	19,049,442	66.7
Persons engaged.....	22,201	24,378	-8.9	Contract work.....	1,877,278	595,130	131.4
Proprietors and firm members, total.....	443	1,799	-75.4	Supplies and materials <sup>3</sup> .....	32,692,276	21,552,312	51.7
Number performing manual labor in or about the mines, quarries, and wells.....	172	856	-79.9	Fuel and power.....	7,047,225	2,775,643	153.9
Salaried employees.....	2,415	2,062	17.1	Royalties and rents.....	10,910,883	2,514,259	287.7
Wage earners (average number).....	19,344	20,517	-5.7	Taxes.....	10,026,745	576,946	1,687.9
Power used (horsepower).....	313,213	162,288	93.1	Value of products.....	163,770,243	68,382,454	158.4

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Figures not available.

<sup>3</sup> Includes for 1919 cost of ore, magnesite, and natural gas, and for 1909 cost of ore and natural gas, purchased as material or for resale.

## MINES AND QUARRIES—CALIFORNIA.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Amount.	Per cent distribution.		
All industries.....	725	19,344	100.0	\$163,770,243	100.0	Granite.....	17	162	0.8	\$563,485	0.3
Petroleum and natural gas.....	403	12,344	63.8	139,018,663	84.9	Limestone.....	13	245	1.3	540,967	0.3
Gold and silver, lode mines.....	99	2,881	14.9	8,773,757	5.4	Lead and zinc.....	17	115	0.6	261,454	0.2
Gold, placer mines.....	60	1,102	5.7	7,937,654	4.9	Clay.....	13	88	0.5	177,246	0.1
Copper.....	15	1,055	5.5	2,397,610	1.5	Sandstone.....	6	27	0.1	65,074	( <sup>2</sup> )
Quicksilver.....	17	485	2.5	1,217,077	0.7	Abrasive materials.....	4	17	0.1	61,312	( <sup>2</sup> )
Magnetite.....	8	230	1.2	677,661	0.4	Chromite.....	12	21	0.1	58,366	( <sup>2</sup> )
Basalt.....	16	262	1.4	635,588	0.4	All other industries <sup>1</sup> .....	25	310	1.6	1,384,308	0.8

<sup>1</sup> Includes enterprises in industries as follows: Asbestos, 1; asphalt, 2; barytes, 1; coal, bituminous, 1; feldspar, 1; graphite, 1; gypsum, 1; iron ore, 1; manganese, 3; marble, 3; mineral pigments, 2; pyrite, 3; rare metals (tungsten), 1; silica, 1; talc and soapstone, 3.

<sup>2</sup> Less than one-tenth of 1 per cent.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	725	19,344	\$163,770,243	\$225,890	100.0	100.0	100.0
Corporation.....	492	18,367	157,638,252	320,505	67.9	94.9	96.3
Individual.....	121	468	2,905,040	24,752	16.7	2.4	1.8
Firm.....	104	396	2,755,121	26,492	14.3	2.0	1.7
Other.....	8	113	331,830	41,479	1.1	0.6	0.2
PETROLEUM AND NATURAL GAS.....	403	12,344	139,018,663	344,959	100.0	100.0	100.0
Corporation.....	337	12,008	125,009,248	400,621	83.6	97.3	97.1
Individual.....	40	196	2,239,725	55,993	9.9	1.6	1.6
Firm.....	21	108	1,615,931	76,949	5.2	0.9	1.2
Other.....	5	32	163,759	30,752	1.2	0.3	0.1
GOLD AND SILVER, LODGE MINES.....	99	2,881	8,773,757	88,624	100.0	100.0	100.0
Corporation.....	46	2,658	7,918,133	172,133	46.5	92.3	90.2
Individual.....	19	74	92,807	4,885	19.2	2.6	1.1
Firm <sup>1</sup> .....	34	149	762,817	22,436	34.3	5.2	8.7
GOLD, PLACER MINES.....	60	1,102	7,937,654	132,294	100.0	100.0	100.0
Corporation.....	28	1,005	7,607,977	271,713	46.7	91.2	95.8
Individual.....	18	65	306,590	17,033	30.0	5.9	3.9
Firm <sup>2</sup> .....	14	32	23,087	1,649	23.3	2.9	0.3
COPPER.....	15	1,055	2,397,610	169,841	100.0	100.0	100.0
Corporation.....	11	1,049	2,387,045	217,086	73.3	99.4	99.6
Firm <sup>3</sup> .....	4	6	9,665	2,416	26.7	0.6	0.4
BASALT, GRANITE, LIMESTONE, AND SANDSTONE.....	52	696	1,805,134	34,714	100.0	100.0	100.0
Corporation.....	30	642	1,668,733	55,624	57.7	92.2	92.4
Individual.....	14	30	57,667	4,119	26.9	4.3	3.2
Firm.....	8	24	78,734	9,842	15.4	3.4	4.4
QUICKSILVER.....	17	485	1,217,077	71,593	100.0	100.0	100.0
Corporation.....	7	374	957,021	136,717	41.2	77.1	78.6
Firm <sup>4</sup> .....	10	111	260,056	26,006	58.8	22.9	21.4
LEAD AND ZINC.....	17	115	261,454	15,380	100.0	100.0	100.0
Corporation.....	8	103	228,411	28,551	47.1	89.6	87.4
Individual.....	9	12	33,043	3,671	52.9	10.4	12.6
CLAY.....	13	88	177,246	13,634	100.0	100.0	100.0
Corporation.....	7	70	140,821	20,117	53.8	79.5	79.4
Individual.....	6	18	36,425	6,071	46.2	20.5	20.5
CHROMITE.....	12	21	58,366	4,864	100.0	100.0	100.0
Individual.....	4	13	40,719	10,180	33.3	61.9	66.3
Firm.....	8	8	17,647	2,206	66.7	38.1	30.2

<sup>1</sup> Includes 2 other forms of organization.  
<sup>2</sup> Includes 1 other form of organization.

<sup>3</sup> Includes 2 individuals.  
<sup>4</sup> Includes 2 firms.

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TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES.....</b>	<b>725</b>	<b>100.0</b>	<b>19,344</b>	<b>100.0</b>	<b>COPPER.....</b>	<b>15</b>	<b>100.0</b>	<b>1,055</b>	<b>100.0</b>
No wage earners.....	96	13.2	.....	.....	No wage earners.....	1	6.7	.....	.....
1 to 5.....	276	38.1	2,980	15.4	1 to 5.....	4	26.7	12	1.1
6 to 20.....	195	26.9	2,578	13.3	6 to 20.....	2	13.3	15	1.4
21 to 50.....	88	12.1	3,395	17.6	21 to 50.....	1	6.7	27	2.6
51 to 100.....	34	4.7	2,333	12.1	51 to 100.....	4	26.7	304	28.8
101 to 500.....	30	4.1	6,216	32.1	101 to 500.....	3	20.0	697	66.1
501 to 1,000.....	6	0.8	5,892	30.1					
<b>PETROLEUM AND NATURAL GAS.....</b>	<b>403</b>	<b>100.0</b>	<b>12,344</b>	<b>100.0</b>	<b>BASALT, GRANITE, LIMESTONE, AND SANDSTONE.....</b>	<b>52</b>	<b>100.0</b>	<b>696</b>	<b>100.0</b>
No wage earners.....	39	9.7	.....	.....	No wage earners.....	5	9.6	.....	.....
1 to 5.....	154	38.2	636	5.2	1 to 5.....	16	30.8	34	4.9
6 to 20.....	123	30.5	1,804	14.6	6 to 20.....	20	38.5	221	31.8
21 to 50.....	48	11.9	2,120	17.2	21 to 50.....	10	19.2	308	44.3
51 to 100.....	21	5.2	1,439	11.7	101 to 500.....	1	1.9	133	19.1
101 to 500.....	12	3.0	2,453	19.9					
501 to 1,000.....	6	1.5	3,892	31.5					
<b>GOLD AND SILVER, LODE MINES.....</b>	<b>99</b>	<b>100.0</b>	<b>2,881</b>	<b>100.0</b>	<b>QUICKSILVER.....</b>	<b>17</b>	<b>100.0</b>	<b>485</b>	<b>100.0</b>
No wage earners.....	22	22.2	.....	.....	1 to 5.....	8	47.1	24	4.9
1 to 5.....	33	33.3	89	3.1	6 to 20.....	3	17.6	31	6.4
6 to 20.....	20	20.2	206	7.2	21 to 50.....	4	23.5	135	27.8
21 to 50.....	11	11.1	388	13.5	101 to 500.....	2	11.8	295	60.8
51 to 100.....	5	5.1	343	11.9					
101 to 500.....	8	8.1	1,855	64.4					
<b>GOLD, PLACER MINES.....</b>	<b>60</b>	<b>100.0</b>	<b>1,102</b>	<b>100.0</b>	<b>MAGNESITE.....</b>	<b>8</b>	<b>100.0</b>	<b>230</b>	<b>100.0</b>
No wage earners.....	11	18.3	.....	.....	No wage earners.....	1	12.5	.....	.....
1 to 5.....	28	46.7	73	6.6	1 to 5.....	1	12.5	1	0.4
6 to 20.....	10	16.7	113	10.3	6 to 20.....	2	25.0	19	8.3
21 to 50.....	7	11.7	228	20.7	21 to 50.....	2	25.0	49	21.3
51 to 100.....	2	3.3	137	12.4	51 to 100.....	1	12.5	52	22.6
101 to 500.....	2	3.3	551	50.0	101 to 500.....	1	12.5	109	47.4

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	1,629	19,344	8	104	2	2	143	4,500	458	14,411	16	324	2	3
Petroleum and natural gas.....	364	12,344	7	99	1	1	58	2,795	290	9,427	6	18	2	3
Gold and silver, lode mines.....	77	2,881	.....	.....	.....	.....	20	976	55	1,675	2	230	.....	.....
Gold, placer mines.....	49	1,102	.....	.....	.....	.....	11	47	31	984	7	71	.....	.....
Copper.....	14	1,055	.....	.....	.....	.....	2	89	12	966	.....	.....	.....	.....
Basalt, granite, limestone, and sandstone.....	47	696	.....	.....	.....	.....	26	303	20	388	1	5	.....	.....
Quicksilver.....	17	485	.....	.....	.....	.....	2	4	15	481	.....	.....	.....	.....
Magnesite.....	7	230	.....	.....	.....	.....	2	129	5	110	.....	.....	.....	.....
All other industries.....	54	551	1	5	1	1	23	165	30	330	.....	.....	.....	.....

<sup>1</sup> Exclusive of 96 enterprises employing no wage earners in industries as follows: Asphalt, 2; chromite, 4; clay, 3; copper, 1; feldspar, 1; gold and silver, lode mines, 22; gold, placer mines, 11; granite, 3; lead and zinc, 4; limestone, 1; magnesite, 1; marble, 1; mineral pigments, 1; petroleum and natural gas, 39; sandstone, 1; talc and soapstone, 1.

## MINES AND QUARRIES—CALIFORNIA.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Percent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	19,747	19,836	19,604	19,530	<i>19,085</i>	19,641	19,401	19,627	19,609	19,672	20,083	20,499	20,437	92.8
Producing enterprises.....	19,344	19,552	19,319	19,238	<i>18,718</i>	19,298	19,079	19,266	19,176	19,182	19,555	19,916	19,831	94.0
Petroleum and natural gas.....	12,344	12,060	12,313	12,224	<i>11,139</i>	12,420	12,231	12,187	12,140	12,378	12,550	12,685	12,601	94.8
Gold and silver, lode mines.....	2,881	2,864	2,911	2,894	2,778	2,914	2,846	2,964	2,903	2,768	2,821	2,927	2,983	92.8
Gold, placer mines.....	1,102	1,011	1,047	<i>1,009</i>	1,010	1,106	1,110	1,310	1,148	1,136	1,155	1,183	1,099	83.4
Copper.....	1,055	1,255	1,164	1,109	1,050	1,012	982	996	1,078	986	1,025	1,060	855	76.1
Quicksilver.....	485	686	456	431	313	380	452	500	507	511	510	534	510	45.6
Basalt.....	262	189	155	229	268	270	249	271	264	283	308	337	301	47.4
Limestone.....	245	263	240	236	250	253	242	228	237	236	228	261	257	79.5
Magnesite.....	220	183	67	159	181	208	240	271	270	273	367	318	293	17.9
Granite.....	162	146	140	136	141	140	134	142	136	171	201	210	247	54.3
Lead and zinc.....	115	137	120	132	135	129	112	99	93	95	105	108	112	67.2
Clay.....	88	71	69	66	87	92	90	65	86	96	144	108	82	45.8
Sandstone.....	27	14	16	28	20	24	22	30	53	27	28	26	27	35.9
Chromite.....	21	10	11	15	19	23	29	21	17	28	26	31	17	32.3
Abrasive materials.....	17	39	22	21	24	18	20	15	19	15	5	6	9	16.7
All other industries.....	310	613	588	549	301	304	290	265	197	190	142	142	159	22.7
Nonproducing enterprises.....	403	284	285	292	309	343	322	361	433	490	528	533	606	46.9
Gold and silver, lode and placer mines, copper, lead, and quicksilver.....	312	199	211	203	220	266	263	293	350	407	418	459	469	43.3
Petroleum and natural gas.....	91	85	74	89	89	77	59	68	83	83	115	124	146	40.4

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TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.								
		Total.	Petroleum and natural gas.	Gold and silver, lode mines. <sup>1</sup>	Gold, placer mines.	Copper.	Quick-silver.	Magnesite.	Basalt.	Granite.
Number of enterprises.....	785	725	408	99	60	15	17	8	16	17
Number of mines and quarries.....	411	357		109	78	16	17	8	17	18
Number of petroleum and natural-gas wells.....	9,212	9,197	9,197							
Number of natural-gas gasoline plants.....	58	58	58							
Capital.....	\$460, 277, 283	\$446, 759, 385	\$359, 851, 160	\$34, 494, 493	\$19, 087, 282	\$17, 906, 644	\$2, 458, 708	\$367, 044	\$1, 307, 983	\$1, 027, 730
Principal expenses:										
Salaries and wages—										
Officers.....	\$1, 200, 715	\$1, 239, 392	\$804, 252	\$81, 441	\$133, 771	\$44, 875	\$43, 020	\$13, 050	\$18, 421	\$32, 950
Superintendents and managers.....	\$2, 259, 538	\$2, 165, 970	\$1, 594, 096	\$174, 723	\$145, 785	\$69, 819	\$69, 844	\$18, 187	\$28, 316	\$5, 100
Technical employees.....	\$261, 675	\$240, 983	\$62, 746	\$63, 140	\$15, 986	\$39, 652	\$3, 356	\$1, 800		
Clerks, etc.....	\$1, 513, 740	\$1, 495, 206	\$1, 281, 957	\$46, 913	\$45, 636	\$39, 730	\$10, 826	\$5, 820	\$0, 203	\$11, 977
Wage earners.....	\$32, 347, 898	\$31, 748, 170	\$23, 367, 544	\$3, 870, 121	\$1, 475, 408	\$1, 550, 430	\$620, 784	\$309, 323	\$334, 460	\$167, 932
Supplies and materials.....	\$82, 618, 342	\$81, 816, 526	\$25, 385, 586	\$2, 172, 364	\$1, 941, 920	\$1, 078, 351	\$270, 746	\$180, 387	\$128, 746	\$148, 179
Cost of ore, magnesite, and natural gas purchased for use as material or for resale.....	\$875, 751	\$875, 751	\$510, 073	\$334, 213				\$31, 465		
Fuel.....	\$4, 467, 154	\$4, 424, 508	\$3, 381, 051	\$150, 402	\$5, 571	\$119, 255	\$39, 442	\$89, 432	\$10, 530	\$14, 936
Power.....	\$2, 609, 860	\$2, 632, 717	\$688, 249	\$672, 413	\$949, 906	\$271, 298	\$29, 138	\$11, 054	\$39, 266	\$18, 743
Royalties and rents.....	\$10, 923, 104	\$10, 910, 833	\$10, 066, 356	\$43, 464	\$35, 157	\$3, 686	\$12, 586	\$46, 000	\$16, 938	\$735
Taxes.....	\$10, 040, 688	\$10, 026, 745	\$9, 195, 204	\$275, 316	\$317, 664	\$117, 839	\$19, 788	\$2, 711	\$16, 051	\$7, 654
Contract work.....	\$1, 432, 915	\$1, 377, 278	\$908, 706	\$20, 507	\$126, 970	\$38, 320	\$7, 173	\$84, 753		\$250
Expenditures for development (included in the above items).....	\$29, 168, 509	\$27, 656, 157	\$25, 633, 823	\$1, 027, 359	\$140, 076	\$540, 738	\$106, 984	\$2, 368	\$126	\$8, 250
Value of products.....	\$163, 776, 243	\$163, 770, 243	\$139, 018, 663	\$3, 773, 757	\$7, 937, 654	\$2, 397, 610	\$1, 217, 077	\$677, 661	\$635, 588	\$563, 485
Persons engaged in industry.....										
Proprietors and firm members (total).....	22, 725	22, 201	14, 317	3, 167	1, 270	1, 140	543	260	294	199
Number performing manual labor.....	470	442	131	111	55	7	23	10	7	15
Salaried officers.....	176	172	22	62	32	3	9		2	8
Superintendents and managers.....	409	398	274	33	29	7	9	5	5	8
Technical employees.....	757	709	469	67	45	21	15	8	13	4
Clerks, etc.....	135	127	49	39	8	20	2	1		
Wage earners (average number).....	1, 207	1, 186	1, 020	36	31	30	9	6	7	10
Wage earners by occupation (Dec. 15):	19, 747	19, 344	12, 344	2, 881	1, 102	1, 055	485	230	262	162
Above ground (total).....	* 17, 514	* 17, 147	12, 810	862	1, 125	* 509	326	178	337	236
Below ground (total).....	3, 806	3, 567		2, 334	72	579	248	121		
Foremen, shift bosses, etc.—										
Above ground.....	229	215		36	84	12	9	16	14	9
Below ground.....	185	163		88	4	31	11	10		
Engineers, hoistmen, electricians, mechanics, etc.—										
Above ground.....	11, 761	11, 554	10, 427	292	406	144	86	36	38	33
Below ground.....	124	115		84		20	6	2		
Miners, quarrymen, and drillmen, including their helpers—										
Above ground.....	442	417	14	54	11	23	10	75	63	
Below ground.....	1, 739	1, 586		1, 075	57	218	79	40		
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—										
Above ground.....	221	208		38	9	31	27	18	30	2
Below ground.....	631	575		375	4	92	30	6		
Muckers, loaders, laborers, and others not classified—										
Above ground.....	4, 041	3, 933	2, 383	176	571	147	58	32	174	57
Below ground.....	1, 187	1, 128		712	7	218	72	63		
Wage earners employed in mills and beneficiating plants—										
Above ground.....	320	320		306	2	164	118	66		72
Number of females included in wage earners reported above—										
Above ground.....	32	31	14	12	3		1			
Mineral and oil land operated..... acres.	620, 603	588, 517	482, 330	19, 198	30, 356	7, 804	17, 336	1, 686	1, 407	2, 944
Land controlled, total..... acres.	658, 986	626, 540	482, 330	27, 622	44, 185	12, 876	20, 999	2, 136	1, 407	3, 104
Mineral and oil land owned.....	402, 799	376, 108	300, 439	17, 399	21, 946	7, 464	8, 124	490	1, 171	2, 380
Mineral and oil land leased.....	217, 837	212, 439	181, 891	1, 819	8, 410	340	9, 212	1, 198	386	114
Timber and other lands owned and leased.....	38, 360	38, 008		8, 404	13, 829	5, 072	3, 363	450		160
Power used: Aggregate horsepower.....	319, 717	313, 213	220, 099	33, 412	29, 488	12, 648	1, 907	610	4, 792	2, 479
Prime movers (horsepower, total).....	209, 889	206, 805	186, 294	11, 949	2, 180	2, 670	741	297	460	257
Steam engines—										
Number.....	3, 170	3, 144	3, 064	10	2	3	4		17	12
Horsepower.....	88, 674	88, 052	84, 471	1, 871	40	400	106		426	201
Steam turbines—										
Number.....	5	5		2		3				
Horsepower.....	1, 750	1, 750		250		1, 500				
Internal-combustion engines—										
Number.....	3, 065	3, 056	2, 866	67	3	16	28	21	1	3
Horsepower.....	106, 162	106, 615	101, 823	1, 365	50	235	635	297	35	31
Water wheels and turbines—										
Number.....	126	107		82	18	2				1
Horsepower.....	13, 303	11, 388		8, 463	2, 090	535				25
Purchased power (horsepower, total).....	109, 828	106, 408	33, 795	21, 463	27, 308	9, 978	1, 166	313	4, 332	2, 222
Electric motors operated by purchased current—										
Number.....	2, 946	2, 882	1, 318	527	802	179	39	10	88	60
Horsepower.....	109, 733	106, 363	33, 750	21, 463	27, 308	9, 978	1, 166	313	4, 332	2, 222
Other equipment operated by purchased power—										
Horsepower.....	45	45	45							
Electric motors run by current generated by enterprise using:										
Number.....	426	413	350	52	95		3			
Horsepower.....	10, 663	10, 382	7, 462	2, 770			20			
Fuel used:										
Coal, anthracite..... tons, 2,240 pounds.....	127	125		37	2	30	1			5
Coal, bituminous..... tons, 2,000 pounds.....	1, 988	1, 927		85	10	1, 673				1
Coke..... tons, 2,000 pounds.....	1, 207	1, 205		3	1	556		645		
Wood..... cords.....	11, 706	8, 241		1, 227	502	5, 080	1, 352			
Fuel oils..... barrels.....	2, 267, 967	2, 264, 670	2, 124, 490	48, 985	80	23, 724	19, 335	23, 253	5, 309	6, 860
Gasoline and other volatile oils..... barrels.....	11, 903	10, 301	442	4, 194	186	458	1, 063	1, 024	14	92
Natural gas..... 1,000 cubic feet.....	52, 202, 703	52, 091, 849	52, 091, 454							

<sup>1</sup> Includes 2 reduction mills operated independently of mines and 4 operations on dumps and old tailings.

\* Includes 1 wage earner under 16 years of age.



TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919—Continued.

	PRODUCING ENTERPRISES—continued.							NONPRODUCING ENTERPRISES.		
	Limestone.	Lead and zinc.	Clay.	Sandstone.	Abrasive materials.	Chromite.	All other. <sup>1</sup>	Total.	Metal mines. <sup>2</sup>	Petroleum and natural gas.
Number of enterprises.....	13	17	13	6	4	12	25	60	47	13
Number of mines and quarries.....	13	18	13	7	4	13	26	54	54	.....
Number of petroleum and natural-gas wells.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number of natural-gas gasoline plants.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Capital.....	\$1,823,063	\$5,919,640	\$582,672	\$113,602	\$96,544	\$200,908	\$2,085,017	\$13,494,898	\$11,450,461	\$2,044,447
Principal expenses:										
Salaries and wages—										
Officers.....	\$14,677	\$20,000	\$10,610	.....	.....	\$375	\$21,950	\$21,323	\$16,192	\$5,131
Superintendents and managers.....	\$9,342	\$16,445	\$9,112	\$37	\$3,650	\$3,000	\$42,417	\$33,568	\$69,859	\$23,709
Technical employees.....	\$3,000	\$1,800	\$2,400	.....	\$2,465	.....	\$10,606	\$20,693	\$14,047	\$6,646
Clerks, etc.....	\$16,520	\$4,455	\$2,520	.....	.....	.....	\$21,693	\$18,534	\$7,949	\$10,585
Wage earners.....	\$289,628	\$160,334	\$89,367	\$39,041	\$25,492	\$23,120	\$419,558	\$599,715	\$406,646	\$190,072
Supplies and materials.....	\$122,176	\$57,755	\$22,066	\$20,202	\$4,342	\$3,649	\$274,606	\$501,817	\$357,781	\$444,086
Cost of ore, magnesite, and natural gas purchased for use as material or for resale.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fuel.....	\$16,361	\$9,290	\$1,757	\$669	\$969	\$875	\$12,586	\$42,646	\$20,241	\$22,405
Power.....	\$13,746	\$3,693	\$3,664	\$1,631	.....	.....	\$42,861	\$47,133	\$39,969	\$7,164
Royalties and rents.....	\$1,000	\$3,993	\$2,390	\$2,300	\$3,205	\$4,777	\$33,667	\$12,271	\$1,444	\$10,827
Taxes.....	\$6,106	\$10,106	\$7,379	\$1,653	\$317	\$47	\$49,410	\$13,048	\$10,733	\$3,205
Contract work.....	\$1,500	\$35,589	\$12,781	.....	\$1,463	\$3,455	\$95,751	\$55,637	\$35,334	\$20,308
Expenditures for development (included in the above items).....	\$13,488	\$142,854	\$13,755	.....	\$1,200	\$2,500	\$22,636	\$1,512,352	\$507,668	\$704,684
Value of products.....	\$540,987	\$261,454	\$177,246	\$65,074	\$61,313	\$58,366	\$1,394,308	.....	.....	.....
Persons engaged in industry.....	275	141	109	24	33	46	373	524	410	114
Proprietors and firm members (total).....	8	11	6	6	13	23	16	28	28	.....
Number performing manual labor.....	2	7	1	.....	3	12	9	4	4	.....
Salaried officers.....	6	4	4	.....	.....	1	8	16	11	5
Superintendents and managers.....	4	6	6	1	2	1	17	48	39	9
Technical employees.....	1	2	2	.....	.....	.....	3	8	7	1
Clerks, etc.....	11	4	3	.....	.....	.....	19	21	13	8
Wage earners (average number).....	245	115	88	27	17	21	310	408	312	91
Wage earners by occupation (Dec. 15):										
Above ground (total).....	333	61	104	61	31	20	154	267	212	155
Below ground (total).....	.....	81	.....	.....	.....	.....	117	299	299	.....
Foremen, shift bosses, etc.—										
Above ground.....	11	5	5	5	1	1	7	14	14	.....
Below ground.....	.....	8	.....	.....	.....	.....	10	22	22	.....
Engineers, hoistmen, electricians, mechanics, etc.—										
Above ground.....	47	15	5	3	3	3	17	207	83	124
Below ground.....	.....	2	.....	.....	.....	.....	1	9	9	.....
Miners, quarrymen, and drillmen, including their helpers—										
Above ground.....	112	.....	3	15	.....	5	27	25	25	.....
Below ground.....	.....	48	.....	.....	.....	9	60	153	153	.....
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—										
Above ground.....	14	15	6	.....	6	1	5	13	13	.....
Below ground.....	.....	10	.....	.....	.....	2	6	56	56	.....
Muckers, loaders, laborers, and others not classified—										
Above ground.....	149	4	80	38	12	8	44	106	77	31
Below ground.....	.....	13	.....	.....	.....	3	40	59	59	.....
Wage earners employed in mills and beneficiating plants—										
Above ground.....	.....	22	5	.....	9	2	54	.....	.....	.....
Number of females included in wage earners reported above—										
Above ground.....	.....	.....	.....	.....	1	.....	.....	1	1	.....
Mineral and oil land operated..... acres.	3,515	3,693	3,721	176	3,307	2,309	8,775	32,086	27,217	4,869
Land controlled, total..... acres.	4,616	3,668	5,901	197	3,307	2,370	12,333	32,446	27,577	4,869
Mineral and oil land owned.....	887	3,173	2,201	73	3,297	323	6,296	26,691	24,258	2,433
Mineral and oil land leased.....	2,628	490	1,620	103	10	1,961	2,479	5,408	2,972	2,436
Timber and other land owned and leased.....	1,000	5	2,080	21	.....	61	3,558	347	347	.....
Power used: Aggregate horsepower.....	1,778	826	\$14	585	54	101	4,130	6,504	5,481	1,023
Prime movers (horsepower, total).....	166	536	87	20	54	101	1,003	3,084	2,536	548
Steam engines—										
Number.....	2	6	.....	.....	1	.....	3	26	13	13
Horsepower.....	80	155	.....	.....	3	.....	300	622	289	333
Steam turbines—										
Number.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Horsepower.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Internal-combustion engines—										
Number.....	4	15	6	1	8	9	13	29	22	7
Horsepower.....	76	381	87	20	51	101	428	547	382	165
Water wheels and turbines—										
Number.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Horsepower.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Purchased power (horsepower, total).....	1,622	290	227	565	.....	.....	3,127	3,420	2,945	475
Electric motors operated by purchased current—										
Number.....	40	9	16	15	.....	.....	79	64	58	6
Horsepower.....	1,622	290	227	565	.....	.....	3,127	3,420	2,945	475
Other equipment operated by purchased power—										
Horsepower.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Electric motors run by current generated by enterprise using:										
Number.....	.....	.....	.....	.....	.....	.....	3	13	13	.....
Horsepower.....	.....	.....	.....	.....	.....	.....	35	281	281	.....
Fuel used:										
Coal, anthracite..... tons, 2,240 pounds.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....
Coal, bituminous..... tons, 2,000 pounds.....	.....	94	20	.....	.....	.....	44	61	57	4
Coke..... tons, 2,000 pounds.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....
Wood..... cords.....	.....	.....	.....	.....	.....	.....	.....	3,465	3,465	.....
Fuel oils..... barrels.....	6,781	1,689	449	48	.....	30	50	3,287	288	3,009
Gasoline and other volatile oils..... barrels.....	263	185	59	.....	.....	90	1,395	1,672	349	1,253
Natural gas..... 1,000 cubic feet.....	.....	.....	.....	.....	.....	.....	385	110,854	.....	110,854

<sup>1</sup> Includes enterprises as follows: Asbestos, 1; asphalt, 2; barytes, 1; coal, bituminous, 1; feldspar, 1; graphite, 1; gypsum, 1; iron ore, 1; manganese, 3; marble, 3; mineral pigments, 2; pyrite, 3; rare metals (tungsten), 1; silica, 1; talc and soapstone, 3.

<sup>2</sup> Includes enterprises as follows: Copper, 4; gold and silver, lode mines, 32; gold, placer mines, 9; lead, 1; quicksilver, 1.

## COLORADO.

Colorado, which ranks seventh among the states in size (land area, 103,658 square miles) and thirty-third in population (939,629 in 1920), ranked fifteenth in value of mineral products for the year 1919. The state ranked fourteenth in the total number of persons engaged in the mining industries and thirteenth in the average number of wage earners employed.

The gross amount received for products by operators of all mines, quarries, and wells in Colorado in 1919 was \$51,217,038, and in 1909 was \$45,680,135. Deducting from these amounts a duplication of \$4,282,353, the value of gold, silver, lead, and zinc ores sold in 1919 by some producers and further treated and reported by others and for 1909, \$4,930,144, a similar duplication in the value of gold and silver ores and coal, leaves \$46,934,685 and \$40,749,991, the net values of minerals produced in 1919 and 1909, respectively. The net value for 1919 is an increase of 15.2 per cent over the corresponding value for 1909. The amount given as the value of all products includes \$599,012, of which \$361,433 was received for custom milling of ores and minerals and the balance for mineral and other unspecified by-products, power sold, and for miscellaneous services for other enterprises.

Increases in wages, cost of supplies and fuel and power, and in the value of products, as shown in Table 1, are largely due to general price increases and do not correctly indicate growth of mining in Colorado during the census period 1909 to 1919. Nor, on the other hand, is a general decline in mining to be inferred from the decrease shown in the number of enterprises which is chiefly a reflection of the adverse conditions affecting metal mining during 1919 and in part may be the result of consolidation of operations. Probably the most significant facts shown by this table are the very small increase in the capital invested and the decrease in the number of wage earners. The addition of Federal income and excess-profits taxes since 1909 accounts for the increase in taxes shown.

The mining industries reported for 1919, ranked according to value of products, were those engaged in producing coal, gold and silver ores, lead and zinc ores, ores of the rare metals (uranium, vanadium, molybdenum, and tungsten), gold from placer mines, limestone, manganiferous ores, clay, petroleum, granite, fluorspar, pyrite, sandstone, gypsum, copper ores, and graphite. The mineral by-products produced by various industries were as follows: Sandstone from clay mines, silver from manganese mines, lead and zinc ores from pyrite mines, manganese from gold and silver mines, pyrite from copper and lead and zinc mines, and limestone from lead and zinc mines. There

is also included in the total value of products the value of a small quantity of lime which was produced by operators of limestone quarries and was not reported by the census of manufactures.

The mining industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2, which also shows that in the less important industries different rank is determined by the per cent distribution of the average number of wage earners in each industry.

The statistics for the leading industry, bituminous coal mining, as shown in this report, includes, for convenience and to avoid disclosure of individual operations, the data for two enterprises producing high-rank anthracite. The value of coal produced in 1919 was \$28,342,195, which was 60.4 per cent of the net value of products of all industries in the state. This amount gives Colorado eighth rank in importance among coal-producing states. The coal mining is distributed in 16 counties, and the industry produces a large variety of coals for domestic, steam, and kiln uses and for manufacture of gas and coke.

The mining of precious and base metals, gold, silver, copper, lead, and zinc, was second in importance in the state as measured by value of products. The values reported for the metal-mining industries are based on the net amounts received by the mine and mill operators for ore, concentrates, and bullion, or the estimated equivalent of sales values when products were to be further treated by the producer. These are not the values of the metals produced or recoverable from these materials by smelting and refining. Colorado ranked first among the states in the value of output from its gold and silver lode mines. The production of rare metals, the value of which was \$1,245,014, a larger amount than reported by any other state, was the mining industry next in importance in the state. Colorado also attained high rank, second and third, respectively, in the value of placer gold and manganese ores reported.

In addition to the operations of the producing mines and quarries much mining work was done in Colorado on properties which were not productive during the year. Of these there were reported 60 enterprises: 58 engaged in developing gold, silver, copper, lead, or zinc mines; 1, a vanadium mine; and 1, a coal mine. These enterprises, with a combined capital of over ten million dollars, employed 478 wage earners and expended \$1,332,902 for development during the year, these figures representing 2.8 per cent of the aggregate number of wage earners and the expenditures reported for all mining operations in the state.

## MINES AND QUARRIES—COLORADO.

The preponderance of the corporation among mining organizations is brought out by Table 3. Corporations controlled 65.6 per cent of all the mining enterprises in the state in 1919, employed 95.8 per cent of the average number of wage earners, and reported 95.8 per cent of the total value of products. Table 3 also shows that while corporate organization of the operating enterprises was characteristic of coal and metal mining industries, it was less marked in the quarrying and clay-mining industries.

The relatively large number of small enterprises as determined by the average number of wage earners employed is shown in Table 4. Of the total number of mining enterprises in Colorado, 77 per cent had fewer than 101 wage earners each, while such enterprises employed only 44.6 per cent of the total number of wage earners. On the other hand, enterprises employing more than 100 wage earners constituted only 9.4 per cent of the total number of enterprises, but employed 55.4 per cent of the total number of wage earners. The coal-mining industry included 73.3 per cent of these larger enterprises.

Table 5 shows that in a majority of the enterprises employing wage earners and for about 75 per cent of

the wage earners in all the mining industries in the state in 1919, the hours of labor were 44 to 53 per week, or that the 8-hour day prevailed. In the coal-mining industry these hours were reported for approximately 93 per cent of the enterprises and 95 per cent of the wage earners. In the metalliferous lode mines 44 to 53 hours per week were reported for about one-half of the enterprises and for 34.2 per cent of the wage earners, but in the other half of the enterprises and for 63.2 per cent of the wage earners the hours of labor were 54 to 62 per week and the 9-hour day prevailed.

The statistics for wage earners given in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The minimum in the coal industry reported in November, instead of in the summer months as has been usual, was the result of the great November strike and abnormally affects the figures for all industries combined.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	477	672	-29.0	Capital.....	\$147,154,642	\$144,639,556	1.7
Number of mines and quarries.....	523	1,575	-66.8	Principal expenses:			
Number of petroleum and natural-gas wells.....	70	76	.....	Salaries.....	2,788,529	2,112,940	32.0
Persons engaged.....	18,502	23,497	-21.3	Wages.....	25,405,043	18,463,206	37.6
Proprietors and firm members, total.....	378	647	-41.6	Contract work.....	307,930	2,006,083	-86.7
Number performing manual labor in or about the mines, quarries, and wells.....	237	232	2.2	Supplies and materials <sup>2</sup> .....	11,954,556	10,389,810	15.1
Salaried employees.....	1,334	1,367	-2.4	Fuel and power.....	2,706,480	1,965,984	38.4
Wage earners (average number).....	16,790	21,483	-21.8	Royalties and rents.....	1,583,712	1,017,447	55.7
Power used (horsepower).....	116,351	96,777	17.8	Taxes.....	1,136,752	542,972	109.4
				Value of products.....	51,217,038	45,690,135	12.1

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

<sup>2</sup> Petroleum wells only.

<sup>3</sup> Includes for 1919 cost of ore, and for 1909 cost of ore and coal, purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	477	16,790	100.0	\$51,217,038	100.0	Limestone.....	14	228	1.4	\$526,738	1.0
Coal, bituminous.....	161	11,253	67.0	28,342,195	55.3	Manganese.....	4	65	0.4	261,940	0.7
Gold and silver, lode mines.....	198	3,495	20.8	16,785,716	32.8	Clay.....	21	59	0.4	174,536	0.3
Lead and zinc.....	27	936	5.6	2,622,150	5.1	Sandstone.....	7	14	0.1	45,723	0.1
Rare metals <sup>1</sup> .....	9	344	2.0	1,245,014	2.4	Copper.....	5	35	0.2	26,723	0.1
Gold, placer mines.....	5	110	0.7	570,819	1.1	All other industries <sup>2</sup> .....	26	262	1.5	515,484	1.0

<sup>1</sup> Includes molybdenum, tungsten, uranium, and vanadium.

<sup>2</sup> Includes enterprises in industries as follows: Fluorspar, 4; granite, 8; graphite, 1; gypsum, 2; petroleum, 10; pyrite, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
<b>ALL INDUSTRIES</b> .....	477	16,790	\$51,217,038	\$107,373	100.0	100.0	100.0
Corporation.....	313	16,077	49,046,766	156,699	65.6	95.8	95.8
Individual.....	65	283	663,872	10,213	13.6	1.7	1.3
Firm <sup>1</sup> .....	99	430	1,506,400	15,216	20.8	2.6	2.9
<b>COAL, BITUMINOUS</b> .....	161	11,252	28,342,195	176,038	100.0	100.0	100.0
Corporation.....	132	11,013	27,817,977	210,742	82.0	97.9	98.1
Individual.....	10	74	189,136	13,914	6.2	0.7	0.5
Firm <sup>2</sup> .....	19	165	385,082	20,287	11.8	1.5	1.4
<b>GOLD AND SILVER, LOSE MINES</b> .....	198	3,495	16,785,716	84,776	100.0	100.0	100.0
Corporation.....	112	3,211	15,915,795	142,105	56.6	91.9	94.8
Individual.....	28	119	287,151	10,255	14.1	3.4	1.7
Firm <sup>3</sup> .....	58	165	582,770	10,048	29.3	4.7	3.5
<b>LEAD AND ZINC</b> .....	27	936	2,622,150	97,117	100.0	100.0	100.0
Corporation.....	20	903	2,393,244	119,662	74.1	97.0	91.3
Firm.....	7	28	228,906	32,701	25.9	3.0	8.7
<b>LIMESTONE AND SANDSTONE</b> .....	21	242	572,461	27,280	100.0	100.0	100.0
Corporation.....	10	171	396,226	39,623	47.6	70.7	69.2
Individual <sup>4</sup> .....	11	71	176,235	16,021	52.4	29.3	30.8
<b>CLAY</b> .....	21	59	174,536	8,311	100.0	100.0	100.0
Corporation.....	10	25	76,213	7,621	47.6	42.4	43.7
Individual <sup>4</sup> .....	11	34	98,323	8,938	52.4	57.6	56.3

<sup>1</sup> Includes 5 other forms of organization.  
<sup>2</sup> Includes 1 other form of organization.

<sup>3</sup> Includes 4 other forms of organization.  
<sup>4</sup> Includes 2 firms.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	477	100.0	16,790	100.0	<b>LEAD AND ZINC</b> .....	27	100.0	936	100.0
No wage earners.....	65	13.6			No wage earners.....	2	7.4		
1 to 5.....	141	29.6	363	2.2	1 to 5.....	9	33.3	18	1.9
6 to 20.....	104	21.8	1,110	6.6	6 to 20.....	7	25.9	77	8.2
21 to 50.....	72	15.1	2,539	15.1	21 to 50.....	1	3.7	22	2.4
51 to 100.....	50	10.5	3,481	20.7	51 to 100.....	4	14.8	237	25.3
101 to 500.....	45	9.4	9,297	55.4	101 to 500.....	4	14.8	532	62.2
<b>COAL, BITUMINOUS</b> .....	161	100.0	11,252	100.0	<b>RARE METALS<sup>1</sup></b> .....	9	100.0	344	100.0
No wage earners.....	1	0.6			1 to 5.....	2	22.2	3	0.9
1 to 5.....	33	20.5	96	0.9	6 to 20.....	2	22.2	33	9.6
6 to 20.....	17	10.6	200	1.8	21 to 50.....	3	33.3	103	31.4
21 to 50.....	42	26.1	1,530	13.6	51 to 100.....	1	11.1	70	20.3
51 to 100.....	35	21.7	2,500	22.2	101 to 500.....	1	11.1	130	37.8
101 to 500.....	33	20.5	6,926	61.6	<b>LIMESTONE</b> .....	14	100.0	228	100.0
<b>GOLD AND SILVER, LOSE MINES</b> .....	198	100.0	3,495	100.0	No wage earners.....	3	21.4		
No wage earners.....	39	19.7			1 to 5.....	4	28.6	15	6.6
1 to 5.....	70	35.4	182	5.2	6 to 20.....	4	28.6	36	15.8
6 to 20.....	57	28.8	581	16.6	21 to 50.....	1	7.1	34	14.9
21 to 50.....	19	9.6	661	18.9	51 to 100.....	2	14.3	143	62.7
51 to 100.....	6	3.0	412	11.8					
101 to 500.....	7	3.5	1,659	47.5					

<sup>1</sup> Includes molybdenum, tungsten, uranium, and vanadium.

## MINES AND QUARRIES—COLORADO.

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	1 412	16, 790	3	212	5	110	272	12, 549	130	3, 917	2	2
Coal, bituminous.....	160	11, 252	2	97	4	100	148	10, 700	6	346	.....	.....
Gold and silver, lode mines.....	159	3, 495	.....	.....	1	1	84	1, 293	74	2, 201	.....	.....
Copper and lead and zinc.....	29	971	1	115	.....	.....	9	236	19	620	.....	.....
Rare metals <sup>1</sup> .....	9	344	.....	.....	.....	.....	.....	.....	9	344	.....	.....
Limestone.....	11	228	.....	.....	.....	.....	8	182	3	46	.....	.....
All other industries.....	44	500	.....	.....	.....	.....	23	138	19	360	2	2

<sup>1</sup> Exclusive of 65 enterprises employing no wage earners in industries as follows: Clay, 9; coal, bituminous, 1; copper, lead, and zinc, 3; fluorspar, 2; gold and silver, lode mines, 39; gold, placer mines, 1; granite, 1; limestone, 3; petroleum, 4; sandstone, 2.

<sup>2</sup> Includes molybdenum, tungsten, uranium, and vanadium.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	17, 268	18, 541	17, 978	17, 870	17, 062	16, 124	16, 149	16, 976	17, 635	17, 358	17, 063	16, 796	16, 694	84. 1
Producing enterprises.....	16, 790	18, 151	17, 600	17, 460	16, 716	15, 723	15, 681	16, 424	17, 086	16, 782	16, 527	16, 176	16, 156	83. 6
Coal, bituminous.....	11, 252	12, 028	11, 566	11, 440	11, 131	10, 547	10, 209	10, 988	11, 490	11, 511	11, 224	10, 086	12, 894	73. 3
Gold and silver, lode mines.....	3, 495	3, 256	3, 244	3, 322	3, 329	3, 596	3, 751	3, 655	3, 813	3, 471	3, 531	3, 452	3, 491	47. 5
Lead and zinc.....	936	1, 815	1, 444	1, 445	1, 138	621	577	647	700	747	753	759	936	34. 4
Rare metals <sup>1</sup> .....	344	484	435	361	238	206	313	324	305	340	404	401	347	45. 4
Limestone.....	228	227	308	274	276	257	268	273	277	243	87	73	78	23. 3
Gold, placer mines.....	110	99	107	109	118	119	115	121	121	95	108	108	100	73. 5
Manganese.....	65	114	92	99	121	122	83	36	13	.....	.....	.....	.....	14. 0
Clay.....	59	45	50	61	52	49	41	57	62	60	75	74	78	58. 7
Copper.....	35	28	37	48	31	37	35	38	35	35	32	34	25	58. 1
Sandstone.....	14	5	5	8	15	15	15	15	18	21	22	15	4	12. 9
All other industries.....	252	291	217	298	267	247	202	223	229	231	241	233	241	65. 0
Nonproducing enterprises.....	478	390	378	410	366	401	468	552	549	576	556	551	539	63. 5

<sup>1</sup> Includes molybdenum, tungsten, uranium, and vanadium.

MINES AND QUARRIES—COLORADO.

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TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.				
		Total.	Coal, bituminous.	Gold and silver, lode mines. <sup>1</sup>	Gold, placer mines.	Lead and zinc. <sup>2</sup>
Number of enterprises.....	537	477	161	198	5	27
Number of mines and quarries.....	586	523	164	234	7	37
Number of petroleum wells.....	70	70				
Capital.....	\$157,410,128	\$147,154,642	\$66,007,130	\$54,043,972	\$1,827,400	\$16,556,300
Principal expenses:						
Salaries and wages—						
Officers.....	\$713,073	\$681,220	\$474,251	\$117,448	\$4,800	\$58,155
Superintendents and managers.....	\$1,216,395	\$1,121,116	\$538,290	\$363,337	\$19,265	\$91,157
Technical employees.....	\$179,084	\$160,406	\$43,708	\$64,255		\$35,361
Clerks, etc.....	\$849,063	\$825,778	\$520,349	\$117,901	\$3,420	\$124,947
Wage earners.....	\$26,041,700	\$25,405,043	\$16,833,313	\$5,675,026	\$190,508	\$1,435,521
Supplies and materials.....	\$8,075,123	\$7,672,303	\$3,052,028	\$3,250,774	\$141,936	\$523,492
Cost of ore purchased.....	\$4,282,353	\$4,282,353		\$3,904,401		\$310,952
Fuel.....	\$1,310,357	\$1,253,016	\$622,923	\$517,390	\$5,388	\$84,798
Power.....	\$1,494,031	\$1,453,464	\$442,261	\$679,716	\$96,202	\$191,572
Royalties and rents.....	\$1,607,400	\$1,583,712	\$732,430	\$523,205	\$37,427	\$199,660
Taxes.....	\$1,155,735	\$1,136,752	\$623,875	\$354,325		\$75,948
Contract work.....	\$423,985	\$397,930	\$16,381	\$177,130		\$31,838
Expenditures for development (Included in the above items).....	\$5,197,011	\$3,864,100	\$1,240,092	\$1,455,215		\$760,121
Value of products.....	\$51,217,038	\$51,217,038	\$28,342,195	\$16,785,716	\$570,819	\$2,622,150
Persons engaged in industry.....	19,106	18,502	12,017	4,077	122	1,094
Proprietors and firm members (total).....	406	373	56	220	3	32
Number performing manual labor.....	240	237	43	144	3	15
Salaried officers.....	228	212	116	66	2	13
Superintendents and managers.....	461	417	184	153	5	26
Technical employees.....	127	110	30	46		24
Clerks, etc.....	615	592	379	97	2	63
Wage earners (average number).....	17,268	16,790	11,252	3,495	110	936
Wage earners by occupation (Dec. 15):						
Above ground (total).....	5,950	5,708	2,772	1,442	112	384
Below ground (total).....	14,510	14,090	10,287	2,509		824
Foremen, shift bosses, etc.—						
Above ground.....	275	247	93	83	6	17
Below ground.....	407	388	218	109		33
Enginemen, hoistmen, electricians, mechanics, etc.—						
Above ground.....	1,575	1,507	894	344	24	127
Below ground.....	530	519	351	117		49
Miners, quarrymen, and drillmen, including their helpers—						
Above ground.....	482	423	106	34	22	3
Below ground.....	8,643	8,375	6,655	1,115		377
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—						
Above ground.....	413	397	210	60	3	19
Below ground.....	2,494	2,458	1,487	700		163
Muckers, loaders, laborers, and others not classified—						
Above ground.....	2,360	2,249	1,479	343	57	40
Below ground.....	2,436	2,350	1,576	468		197
Wage earners employed in mills and beneficiating plants—						
Above ground.....	875	875	80	573		178
Number of females included in wage earners reported above—						
Above ground.....	65	44	3	16	6	3
Number of wage earners under 16 years included in those reported above—						
Above ground.....	3	3			1	
Mineral and oil land operated..... acres.	222,637	211,260	127,831	25,658	6,238	7,598
Land controlled, total..... acres.	223,798	221,939	121,833	26,990	6,238	8,507
Mineral and oil land owned.....	154,227	145,108	89,608	16,149	4,839	5,442
Mineral and oil land leased.....	68,579	65,537	38,573	9,585	1,399	2,164
Timber and other lands owned and leased.....	10,002	10,293	3,657	1,226		901
Power used: Aggregate horsepower.....	120,995	116,351	63,016	32,505	2,365	12,384
Prime movers (horsepower, total).....	45,407	45,481	31,461	9,436	150	1,979
Steam engines—						
Number.....	506	484	274	75		5
Horsepower.....	41,074	40,012	30,327	6,711		650
Steam turbines—						
Number.....	2	2	2			
Horsepower.....	1,050	1,050	1,050			
Internal-combustion engines—						
Number.....	63	55	4	10		1
Horsepower.....	1,331	1,159	84	150		4
Water wheels and turbines—						
Number.....	27	21		13	1	6
Horsepower.....	4,952	4,260		2,575	150	1,325
Purchased power (horsepower, total).....	73,588	69,570	31,555	23,070	2,215	10,405
Electric motors operated by purchased current—						
Number.....	1,375	1,302	785	633	51	240
Horsepower.....	72,243	69,680	31,455	22,955	2,215	10,405
Other equipment operated by purchased power—						
Horsepower.....	345	190	100	85		
Electric motors run by current generated by enterprise using:						
Number.....	343	342	253	13		50
Horsepower.....	12,550	12,525	10,481	696		1,000
Fuel used:						
Coal, anthracite..... tons, 2,240 pounds.....	112	112		8	70	24
Coal, bituminous..... tons, 2,000 pounds.....	413,301	409,373	238,884	107,748	350	6,274
Coals..... tons, 2,000 pounds.....	110	110		110		
Wood..... cords.....	2,801	1,109	25	102	717	
Fuel oils..... barrels.....	5,338	4,588		2,395	34	120
Gasoline and other volatile oils..... barrels.....	1,966	1,684	34	288	2	4
Natural gas..... 1,000 cubic feet.....	6,820	6,820				

<sup>1</sup> Includes 4 reduction mills operated independently of mines and 2 operations on dumps and old tailings.  
<sup>2</sup> Includes 1 reduction mill operated independently of mines.

## MINES AND QUARRIES—COLORADO.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919—Continued.

	PRODUCING ENTERPRISES—continued.							Non-producing enterprises. <sup>a</sup>
	Rare metals. <sup>1</sup>	Lime-stone.	Man-ganese.	Clay.	Sand-stone.	Copper.	All other. <sup>4</sup>	
Number of enterprises.....	9	14	4	21	7	5	26	60
Number of mines and quarries.....	9	14	4	21	8	5	20	63
Number of petroleum wells.....							70	
Capital.....	\$2, 143, 903	\$736, 551	\$310, 000	\$596, 823	\$64, 450	\$722, 256	\$4, 145, 858	\$10, 255, 486
Principal expenses:								
Salaries and wages—								
Officers.....	\$11, 461	\$542	\$1, 500			\$150	\$12, 832	\$31, 844
Superintendents and managers.....	\$43, 173	\$13, 567	\$4, 300	\$5, 300		\$10, 400	\$31, 828	\$95, 279
Technical employees.....	\$16, 282					\$1, 800		\$18, 678
Clerks, etc.....	\$34, 070	\$5, 206	\$450	\$1, 320		\$100	\$7, 925	\$33, 285
Wage earners.....	\$454, 313	\$279, 758	\$108, 121	\$52, 139	\$14, 903	\$43, 032	\$317, 559	\$636, 657
Supplies and materials.....	\$360, 597	\$78, 558	\$16, 893	\$20, 653	\$3, 791	\$17, 448	\$197, 033	\$402, 920
Cost of ore purchased.....	\$7, 000							
Fuel.....	\$22, 787	\$14, 108	\$2, 791	\$617	\$400	\$85	\$31, 829	\$57, 241
Power.....	\$21, 665	\$3, 423	\$4, 923	\$732	\$48	\$480	\$12, 402	\$40, 557
Royalties and rents.....	\$19, 185	\$4, 350	\$35, 556	\$15, 503	\$304	\$392	\$15, 680	\$23, 688
Taxes.....	\$29, 479	\$500	\$1, 907	\$1, 052		\$2, 716	\$35, 087	\$18, 983
Contract work.....	\$887	\$102, 717		\$42, 057	\$19, 065		\$7, 855	\$26, 055
Expenditures for development (included in the above items).....	\$70, 569	\$45, 763	\$14, 600	\$1, 672		\$35, 149	\$240, 218	\$1, 332, 902
Value of products.....	\$1, 245, 014	\$526, 738	\$361, 940	\$174, 536	\$45, 723	\$26, 723	\$515, 484	
Persons engaged in industry.....	419	246	83	78	19	45	302	603
Proprietors and firm members (total).....	3	8	14	13	5	3	21	28
Number performing manual labor.....	2	5	3		4	3	15	3
Salaried officers.....	6		1			1	7	16
Superintendents and managers.....	18	7	2	3		4	15	44
Technical employees.....	9						17	17
Clerks, etc.....	39	3	1	3		1	7	20
Wage earners (average number).....	344	228	65	59	14	35	252	478
Wage earners by occupation (Dec. 15):								
Above ground (total).....	362	285	12	81	21	3	199	247
Below ground (total).....	198		135			30	107	420
Foremen, shift bosses, etc.—								
Above ground.....	27	9	1	4	2	1	4	28
Below ground.....	14		6			3	5	19
Engineers, hoistmen, electricians, mechanics, etc.—								
Above ground.....	84	16	11	6		2	59	68
Below ground.....						2		11
Miners, quarrymen, and drillmen, including their helpers—								
Above ground.....	84	92		18	17		52	21
Below ground.....	113		44			17	54	268
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—								
Above ground.....	39	53					13	16
Below ground.....	58		14			3	28	36
Muckers, loaders, laborers, and others not classified—								
Above ground.....	112	115		53	2		48	111
Below ground.....	13		71			5	20	86
Wage earners employed in mills and beneficiating plants—								
Above ground.....	46						23	
Number of females included in wage earners reported above—								
Above ground.....	16					1	5	21
Number of wage earners under 16 years included in those reported above—								
Above ground.....	2							
Mineral and oil land operated..... acres.....	11, 896	3, 004	55	11, 159	504	709	16, 560	11, 377
Land controlled, total..... acres.....	11, 921	3, 004	55	11, 559	504	733	20, 600	11, 859
Mineral and oil land owned..... acres.....	11, 888	2, 121	28	9, 740	461	638	7, 195	6, 118
Mineral and oil land leased.....	8	883	27	1, 419	43	71	9, 365	5, 342
Timber and other lands owned and leased.....	25			400		44	4, 040	399
Power used: Aggregate horsepower.....	2, 296	521	270	269	87	25	2, 612	4, 644
Prime movers (horsepower, total).....	723	273	145	38	83		2, 193	1, 926
Steam engines—								
Number.....	1	4	3	1	2		119	22
Horsepower.....	80	160	145	8	83		1, 848	1, 062
Steam turbines—								
Number.....								
Horsepower.....								
Internal-combustion engines—								
Number.....	16	5		2			17	8
Horsepower.....	433	113		30			345	172
Water wheels and turbines—								
Number.....	1							6
Horsepower.....	210							662
Purchased power (horsepower, total).....	1, 573	248	125	231	4	25	419	2, 718
Electric motors operated by purchased current—								
Number.....	38	6	3	13	1	2	25	73
Horsepower.....	1, 573	248	125	231	4	25	414	2, 563
Other equipment operated by purchased power—								
Horsepower.....							5	155
Electric motors run by current generated by enterprise using:								
Number.....	26							1
Horsepower.....	346							25
Fuel used:								
Coal, anthracite..... tons, 2,240 pounds.....								
Coal, bituminous..... tons, 2,000 pounds.....	1, 491	2, 353	457	36	75	10	3, 680	4, 023
Coke..... tons, 2,000 pounds.....								
Wood..... cords.....	260						5	1, 662
Fuel oils..... barrels.....	300						1, 739	750
Gasoline and other volatile oils..... barrels.....	805	257		19			275	182
Natural gas..... 1,000 cubic feet.....							6, 890	

<sup>1</sup> Includes molybdenum, tungsten, uranium, and vanadium.<sup>4</sup> Includes enterprises as follows: Fluorspar, 4; granite, 8; graphite, 1; gypsum, 2; petroleum, 10; pyrite, 1.<sup>a</sup> Includes enterprises as follows: Coal, bituminous, 1; gold, silver, copper, lead, or zinc, 58; vanadium 1.

## CONNECTICUT.

Connecticut, which is one of the smaller states—forty-sixth in size (land area 4,820 square miles) and twenty-ninth in population (1,380,631 in 1920)—ranked forty-second in value of mineral products in 1919. It ranked forty-fourth in total number of persons engaged in the mining and quarrying industries and in the average number of wage earners employed.

The total value of products of all mines and quarries in Connecticut in 1919 was \$1,649,003, which was an increase of 19.9 per cent over the corresponding value for 1909. This increase and the increases in salaries, cost of supplies and materials and fuel and power, as shown in Table 1, are due to general price increases and are not indicative of progress in the mining industries. On the other hand, the changes in number of enterprises and mines and quarries operated, in the number of wage earners, and wages paid are significant and indicate a decline of the industries.

The mining industries reported for 1919, classified by principal products and listed in order of value of products, were basalt or traprock, granite, feldspar, iron ore, limestone, silica, and sandstone. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mineral industry, basalt or trap-rock quarrying, produced stone to the value of \$1,262,579, which amount was 76.6 per cent of the value of all mineral products for the state in 1919. The quarrying industries—that is, basalt, granite, limestone,

and sandstone combined—reported 91.1 per cent of the value of all products.

Table 3 shows that corporations outclassed other forms of organization among operators of mining enterprises and that they conducted 58.5 per cent of the total number of enterprises, employed 76.4 per cent of the total number of wage earners, and reported 84.3 per cent of the total value of all products.

The relatively large number of small enterprises, as determined by the average number of wage earners employed, is shown in Table 4. In 1919 only 1 out of a total of 41 enterprises in Connecticut employed more than 100 wage earners. This enterprise, in the basalt or trap-rock industry, employed 104 wage earners, or 19.2 per cent of the total number. The 40 other enterprises in the state were in classes having no wage earners or less than 51, and these enterprises employed 80.8 per cent of the total number of wage earners.

Table 5 shows that in 72.5 per cent of the enterprises employing wage earners and for approximately 85 per cent of the wage earners the prevailing hours of labor per week were 54 to 62.

The statistics for wage earners presented in Table 6, showing the changes in the number employed month by month, reflect conditions in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises .....	41	71	.....	Principal expenses:			
Number of mines and quarries .....	47	75	.....	Salaries .....	\$144,476	\$82,684	74.7
Persons engaged .....	642	1,546	-58.5	Wages .....	646,624	729,377	-11.3
Proprietors and firm members, total ..	27	76	.....	Contract work .....	27,038	13,761	96.5
Number performing manual labor in or about the mines and quarries ..	5	29	.....	Supplies and materials .....	304,096	127,424	138.6
Salaried employees .....	72	85	.....	Fuel and power .....	120,374	71,917	67.4
Wage earners (average number) .....	543	1,385	-60.8	Royalties and rents .....	10,604	16,771	-36.8
Power used (horsepower) .....	8,520	6,296	35.3	Taxes .....	45,057	17,657	155.2
Capital .....	\$3,557,208	\$2,964,442	20.0	Value of products .....	1,649,003	1,375,765	19.9

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.



MINES AND QUARRIES—CONNECTICUT.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	41	543	100.0	\$1,649,003	100.0	Granite.....	11	92	16.9	\$206,546	12.5
Basalt.....	20	363	66.9	1,262,579	76.6	All other industries <sup>1</sup> .....	10	88	16.2	179,878	10.9

<sup>1</sup> Includes enterprises in industries as follows: Feldspar, 4; Iron ore, 1; limestone, 1; sandstone, 3; silica, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	41	543	\$1,649,003	\$40,220	100.0	100.0	100.0
Corporation.....	24	415	1,390,101	57,921	58.5	76.4	84.3
Individual.....	9	72	125,902	18,989	22.0	13.3	7.6
Firm.....	8	56	133,000	16,625	19.5	10.3	8.1
BASALT.....	20	363	1,262,579	63,129	100.0	100.0	100.0
Corporation.....	13	313	1,184,685	87,283	65.0	86.2	89.9
Individual.....	3	12	29,666	9,899	15.0	3.3	2.3
Firm.....	4	38	98,228	24,567	20.0	10.5	7.8
GRANITE.....	11	92	206,546	18,777	100.0	100.0	100.0
Corporation.....	6	50	135,633	22,589	54.5	54.3	65.6
Individual <sup>1</sup> .....	5	42	71,013	14,268	45.5	45.7	34.4

<sup>1</sup> Includes 2 firms.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	41	100.0	543	100.0	GRANITE.....	11	100.0	92	100.0
No wage earners.....	1	2.4			1 to 5.....	3	27.3	6	6.5
1 to 5.....	11	26.8	23	4.2	6 to 20.....	7	63.6	63	67.4
6 to 20.....	21	51.2	237	41.8	21 to 50.....	1	9.1	24	26.1
21 to 50.....	7	17.1	189	34.8					
101 to 500.....	1	2.4	104	19.2					
BASALT.....	20	100.0	363	100.0					
No wage earners.....	1	5.0							
1 to 5.....	3	15.0	7	1.9					
6 to 20.....	10	50.0	119	32.8					
21 to 50.....	5	25.0	133	36.6					
101 to 500.....	1	5.0	104	28.7					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—			
	Enterprises.	Wage earners.	44 to 53.		54 to 63.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries.....	140	543	11	87	29	458
Basalt.....	119	363			19	363
Granite.....	11	92	10	86	1	6
All other industries.....	10	88	1	1	9	87

<sup>1</sup> Exclusive of 1 enterprise employing no wage earners.

# MINES AND QUARRIES—CONNECTICUT.

**TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.**

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	543	447	<b>467</b>	491	535	590	591	<b>606</b>	593	558	555	578	553	71.4
Basalt.....	363	281	<b>377</b>	338	350	380	396	<b>406</b>	406	377	393	395	398	63.2
Granite.....	92	<i>70</i>	<b>67</b>	68	89	108	111	<b>108</b>	97	94	94	95	94	60.4
All other industries.....	88	<i>87</i>	<b>88</b>	85	96	102	94	<b>84</b>	81	87	78	88	91	78.5

**TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.**

	PRODUCING ENTERPRISES.					PRODUCING ENTERPRISES.			
	Total.	Basalt.	Granite.	All other. <sup>1</sup>		Total.	Basalt.	Granite.	All other. <sup>1</sup>
Number of enterprises.....	41	20	11	10	Persons engaged in industry—Contd. Wage earners by occupation (Dec. 15)—Continued. Timbermen, trackmen, and men engaged in hauling, tramming, etc.— Above ground.....	51	20	23	8
Number of mines and quarries.....	47	23	11	14		214	190	7	17
Capital.....	\$3,557,208	\$2,976,339	\$367,209	\$213,660	Muckers, loaders, laborers, and others not classified— Above ground.....	40	2	21	17
Principal expenses:					Mineral land operated.....acres	2,995	2,317	410	268
Salaries and wages—					Land controlled, total.....acres	3,200	2,333	540	308
Officers.....	\$69,623	\$44,915	\$17,500	\$7,208	Mineral land owned.....	2,315	2,221	434	180
Superintendents and managers.....	\$41,943	\$28,209	\$15,134	\$1,500	Mineral land leased.....	225	98	21	168
Technical employees.....	\$7,350	\$6,600	\$750	\$4,737	Timber and other lands owned and leased.....	160	85	85	40
Clerks, etc.....	\$28,660	\$15,788	\$5,115	\$4,737	Power used: Aggregate horsepower.....	8,520	6,264	1,165	1,101
Wage earners.....	\$346,624	\$450,060	\$102,321	\$22,343	Prime movers (horsepower, total).....	4,331	2,720	1,165	946
Supplies and materials.....	\$304,096	\$281,885	\$18,819	\$38,322	Steam engines—				
Fuel.....	\$75,788	\$45,778	\$14,153	\$15,857	Number.....	64	28	30	8
Power.....	\$44,536	\$41,565	.....	\$3,021	Horsepower.....	4,675	2,705	1,150	830
Royalties and rents.....	\$10,804	\$2,817	\$3,313	\$4,474	Internal-combustion engines—				
Taxes.....	\$45,057	\$38,409	\$5,208	\$1,442	Number.....	7	2	1	4
Contract work.....	\$27,083	\$19,337	\$3,000	\$4,701	Horsepower.....	80	15	15	50
Expenditures for development (included in the above items).....	\$10,747	\$6,256	.....	\$4,491	Water wheels and turbines—				
Value of products.....	\$1,649,008	\$1,263,879	\$308,546	\$179,573	Number.....	2	.....	.....	76
Persons engaged in industry.....	642	426	116	101	Horsepower.....	76	.....	.....	2
Proprietors and firm members (total).....	27	11	9	7	Purchased power (horsepower, total).....	3,689	3,594	.....	155
Number performing manual labor.....	5	1	3	1	Electric motors operated by purchased current—				
Salaried officers.....	19	15	2	2	Number.....	45	41	.....	5
Superintendents and managers.....	23	14	7	1	Horsepower.....	3,689	3,594	.....	155
Technical employees.....	4	3	1	.....	Electric motors run by current generated by enterprise using:				
Clerks, etc.....	27	19	5	3	Number.....	8	3	5	.....
Wage earners (average number).....	543	363	92	88	Horsepower.....	44	4	40	.....
Wage earners by occupation (Dec. 15):					Fuel used:				
Above ground (total).....	616	408	117	91	Coal, anthracite, tons, 2,340 pounds..	73	23	22	30
Below ground (total).....	14	.....	.....	14	Coal, bituminous, tons, 2,000 pounds..	11,691	7,455	2,345	1,891
Foremen, shift bosses, etc.—					Wood.....cords	335	35	100	206
Above ground.....	32	17	9	6	Gasoline and other volatile oils.....barrels..	118	4	100	14
Below ground.....	2	.....	.....	2					
Engineers, hoistmen, electricians, mechanics, etc.—									
Above ground.....	81	55	18	8					
Miners, quarrymen, and drillmen, including their helpers—									
Above ground.....	198	124	39	35					
Below ground.....	12	.....	.....	12					

<sup>1</sup> Includes enterprises as follows: Feldspar, 4; iron ore, 1; limestone, 1; sandstone, 3; silica, 1.

## FLORIDA.

Florida, which ranks twenty-first among the states in size (land area 54,861 square miles) and thirty-second in population (968,470 in 1920), ranked thirty-second in value of mineral products for 1919. The state also ranked thirty-second in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total value of products of all mines and quarries in Florida in 1919 was \$8,976,413, which was a slight increase, 1.5 per cent, over the value reported at the census of 1909. Increases in salaries and wages, in cost of supplies and materials, and in the value of products, shown in Table 1, are largely due to general price increases; an actual decline in the mining industries is indicated by the decrease in number of mines and quarries operated and in the number of persons engaged in the industries. The addition of Federal income tax since 1909 will account for the large increase in taxes shown.

The industries reported for 1919, ranked according to value of products, were the mining or quarrying of phosphate rock, fuller's earth, clay, limestone, and rare metals (titanium and zirconium). The mining industries which can be shown without disclosure of individual operations are ranked by value of products in Table 2.

Phosphate rock mining which is localized in nine central Gulf Coast and adjoining counties is the leading mineral industry in Florida. In this industry Florida outranks all other states. The value of products reported for the phosphate-rock industry in Florida in 1919 was \$6,678,888, which was 74.4 per cent of the value of all mineral products of the state and 64.8 per cent of the value of products of the phosphate-rock industry in the United States in 1919 (\$10,300,198).

The mining industry second in importance was fuller's earth produced in Gadsden and Manatee Counties. In this industry also Florida led all other states in 1919, with a production valued at \$1,779,550, which was

19.8 per cent of the total value of mineral products for the state and 88.1 per cent of the value of all fuller's earth produced in the United States in 1919 (\$2,019,226).

The other mining industries, clay, limestone, and the recovery of rare metals from beach sands, were unimportant.

A small amount of development work on nonproductive mining property was reported by one operator in Florida in 1919.

The preponderance of the corporate form of organization among the operating enterprises is brought out in Table 3. Corporations controlled 86.1 per cent of all the mining enterprises in the state in 1919, employed 94.6 per cent of the average number of wage earners, and reported 92.7 per cent of the total value of products.

The relatively large number of small enterprises as determined by the average number of wage earners employed is shown in Table 4. Of the total number of mining enterprises in 1919 in Florida, 72.3 per cent were in classes having fewer than 101 wage earners and such enterprises employed only 33.6 per cent of the total number of wage earners. On the other hand, enterprises employing more than 100 wage earners constituted 27.8 per cent of the total number of enterprises and employed 66.4 per cent of the total number of wage earners. These larger enterprises were all in the phosphate rock and fuller's earth industries.

Table 5 shows that in the majority of enterprises and for about 80 per cent of the wage earners the hours of labor were 54 to 62 per week. In most of the Florida mines the 10-hour day prevailed.

The statistics for wage earners given in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	36	36		Capital.....	\$58,067,662	\$20,794,901	179.3
Number of mines and quarries.....	55	96		Principal expenses:			
Persons engaged.....	3,094	5,761	-35.9	Salaries.....	666,202	495,750	34.4
Proprietors and firm members, total.....	8	9		Wages.....	3,107,813	2,350,854	32.3
Number performing manual labor in or about the mines and quarries.....	2			Contract work.....	121,202	217,091	-44.3
Salaried employees.....	314	304	3.3	Supplies and materials.....	1,836,229	788,946	148.5
Wage earners (average number).....	3,372	5,448	-38.1	Fuel and power.....	1,687,696	1,228,085	38.0
Power used (horsepower).....	44,969	42,366	6.1	Royalties and rents.....	140,815	197,792	-28.3
				Taxes.....	408,529	70,498	479.5
				Value of products.....	8,976,413	8,346,665	1.5

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	36	3,372	100.0	\$8,976,413	100.0	Fuller's earth.....	5	717	21.3	\$1,779,550	19.8
Phosphate rock.....	23	2,330	69.1	6,678,888	74.4	Limestone.....	4	111	3.3	177,201	2.0
						All other industries <sup>1</sup> .....	4	214	6.3	340,774	3.8

<sup>1</sup> Includes enterprises in industries as follows: Clay, 3; rare metals (titanium and strontium), 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	36	3,372	\$8,976,413	\$249,345	100.0	100.0	100.0
Corporation.....	31	3,191	8,319,962	268,386	86.1	91.6	92.7
Individual and firm.....	5	181	656,451	131,290	13.9	6.4	7.3
PHOSPHATE ROCK.....	23	2,330	6,678,888	290,386	100.0	100.0	100.0
Corporation.....	20	2,191	6,076,284	303,814	87.0	94.0	91.0
Individual and firm.....	3	139	602,604	200,868	13.0	6.0	9.0
FULLER'S EARTH.....	5	717	1,779,550	355,910	100.0	100.0	100.0
Corporation.....	5	717	1,779,550	355,910	100.0	100.0	100.0

## MINES AND QUARRIES—FLORIDA.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	36	100.0	3,372	100.0	FULLER'S EARTH.....	5	100.0	717	100.0
1 to 5.....	1	2.8	2	0.1	51 to 100.....	2	40.0	163	21.3
6 to 20.....	4	11.1	58	1.7	101 to 500.....	3	80.0	564	78.7
21 to 50.....	10	27.8	364	10.8	LIMESTONE.....	4	100.0	111	100.0
51 to 100.....	11	30.6	708	21.0	1 to 5.....	1	25.0	2	1.8
101 to 500.....	10	27.8	2,240	66.4	6 to 20.....	1	25.0	17	15.3
PHOSPHATE ROCK.....	23	100.0	2,330	100.0	21 to 50.....	1	25.0	40	36.0
6 to 20.....	3	13.0	41	1.8	51 to 100.....	1	25.0	52	46.8
21 to 50.....	7	30.4	247	10.6					
51 to 100.....	6	26.1	366	15.7					
101 to 500.....	7	30.4	1,676	71.9					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—						INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—					
	Enter-prises.	Wage earn-ers.	44 to 53.		54 to 62.		72 to 84.			Enter-prises.	Wage earn-ers.	44 to 53.		54 to 62.		72 to 84.	
			Enter-prises.	Wage earn-ers.	Enter-prises.	Wage earn-ers.	Enter-prises.	Wage earn-ers.				Enter-prises.	Wage earn-ers.	Enter-prises.	Wage earn-ers.	Enter-prises.	Wage earn-ers.
All industries.....	36	3,372	4	338	20	2,688	3	346	Fuller's earth.....	5	717	.....	.....	5	717	.....	.....
Phosphate rock.....	23	2,330	2	247	18	1,737	3	346	Limestone.....	4	111	1	52	3	59	.....	.....
									All other industries....	4	214	1	39	3	175	.....	.....

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		Janu-ary.	Febru-ary.	March.	April.	May.	June.	July.	August.	Sep-tember.	Octo-ber.	Novem-ber.	Decem-ber.	
All industries.....	3,372	<b>3,848</b>	3,908	3,861	3,934	2,302	<i>1,836</i>	2,330	2,745	2,961	3,650	4,282	4,913	37.4
Phosphate rock.....	2,330	<b>2,867</b>	2,937	2,852	2,955	1,179	<i>814</i>	1,277	1,649	1,870	2,553	3,190	3,817	21.3
Fuller's earth.....	717	<b>602</b>	600	621	663	720	<i>716</i>	748	795	799	779	778	783	75.1
Limestone.....	111	<b>110</b>	108	122	119	122	<i>113</i>	106	106	109	105	115	108	83.6
All other industries.....	214	<b>289</b>	258	266	197	<i>181</i>	193	197	195	190	213	199	210	67.3

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.				
	Total.	Phosphate rock.	Fuller's earth.	Limestone.	All other. <sup>1</sup>
Number of enterprises.....	36	23	5	4	4
Number of mines and quarries.....	55	40	5	6	4
Capital.....	\$58,067,662	\$55,740,488	\$1,382,483	\$116,374	\$828,317
Principal expenses:					
Salaries and wages—					
Officers.....	\$226,123	\$173,773	\$23,000	\$3,600	\$24,750
Superintendents and managers.....	\$213,835	\$169,555	\$25,492	\$9,766	\$9,012
Technical employees.....	\$80,248	\$76,048	\$4,200		
Clerks, etc.....	\$147,006	\$130,595	\$6,009	\$1,671	\$8,731
Wage earners.....	\$3,107,813	\$2,372,141	\$475,702	\$81,651	\$178,319
Supplies and materials.....	\$1,836,229	\$1,455,370	\$279,309	\$34,399	\$67,151
Fuel.....	\$1,613,472	\$1,277,999	\$266,537	\$9,902	\$69,034
Power.....	\$74,224	\$66,786		\$4,438	
Royalties and rents.....	\$140,815	\$128,684	\$4,806	\$5,583	\$1,800
Taxes.....	\$408,529	\$275,354	\$116,698	\$720	\$15,757
Contract work.....	\$121,202	\$115,262	\$5,940		
Expenditures for development (included in the above items).....	\$301,881	\$301,881			
Value of products.....	\$8,976,413	\$6,678,888	\$1,770,580	\$177,201	\$340,774
Persons engaged in industry.....	3,694	2,585	748	124	287
Proprietors and firm members (total).....	8	5		3	
Number performing manual labor.....	2			2	
Salaried officers.....	44	27	6	3	5
Superintendents and managers.....	91	65	16	5	5
Technical employees.....	54	52	2		
Clerks, etc.....	125	106	7	2	10
Wage earners (average number).....	3,372	2,330	717	111	214
Wage earners by occupation (Dec. 15):					
Above ground (total).....	4,898	3,803	788	102	210
Foremen, shift bosses, etc.—					
Above ground.....	256	227	18	5	6
Enginemen, hoistmen, electricians, mechanics, etc.—					
Above ground.....	985	918	41	12	14
Miners, quarrymen, and drillmen, including their helpers—					
Above ground.....	845	603	195	47	
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—					
Above ground.....	274	203	50	6	15
Muckers, loaders, laborers, and others not classified—					
Above ground.....	1,928	1,686	39	33	171
Wage earners employed in mills and beneficiating plants—					
Above ground.....	610	166	440		4
Number of females included in wage earners reported above—					
Above ground.....	52	23	29		
Mineral land operated..... acres.....	118,050	108,925	4,260	236	4,620
Land controlled, total..... acres.....	197,385	188,002	4,518	236	4,620
Mineral land owned.....	114,560	106,685	3,340	106	4,489
Mineral land leased.....	3,490	2,240	920	130	200
Timber and other lands owned and leased.....	79,335	79,077	258		
Power used: Aggregate horsepower.....	44,999	40,996	1,880	400	1,608
Prime movers (horsepower, total).....	42,689	38,881	1,880	325	1,608
Steam engines—					
Number.....	83	27	28	7	21
Horsepower.....	12,426	9,095	1,475	325	1,583
Steam turbines—					
Number.....	17	17			
Horsepower.....	17,751	17,751			
Internal-combustion engines—					
Number.....	52	43	5		4
Horsepower.....	12,510	12,035	405		70
Purchased power (horsepower, total).....	2,280	2,115		165	
Electric motors operated by purchased current—					
Number.....	34	23		11	
Horsepower.....	2,280	2,115		165	
Electric motors run by current generated by enterprise using:					
Number.....	272	263	2		17
Horsepower.....	31,710	31,115	18		577
Fuel used:					
Coal, anthracite..... tons, 2,240 pounds.....	100		100		
Coal, bituminous..... tons, 2,000 pounds.....	32,688	19,621	8,592	390	4,085
Coke..... tons, 2,000 pounds.....	146	146			
Wood..... cords.....	44,567	32,022	9,630	2,052	868
Fuel oils..... barrels.....	787,431	657,039	79,392		51,000
Gasoline and other volatile oils..... barrels.....	11,610	10,786	712		112

<sup>1</sup> Includes enterprises as follows: Clay, 3; rare metals (titanium and zirconium), 1.<sup>2</sup> Includes 1 wage earner under 16 years of age.

## GEORGIA.

Georgia, which ranks twentieth among the states in size (land area 58,725 square miles) and twelfth in population (2,895,832 in 1920), ranked thirty-seventh in value of mineral products for the year 1919. The state ranked thirty-fifth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total value of products of all mines and quarries in Georgia in 1919 was \$4,082,152, an increase of 42 per cent over the corresponding value at the census of 1909. Decline of mining industries in Georgia is indicated by the decreases in the number of enterprises, mines and quarries operated, persons engaged in the industries and in capital invested, as shown by Table 1. The increases in wages, cost of supplies and materials, fuel and power, and in the value of products are due to general price increases, and the impost of Federal income and excess profits taxes since 1909 accounts for the large increase in taxes shown.

The industries reported for 1919, ranked according to value of products, were the mining or quarrying of granite, barytes, clay, bauxite, iron ore, marble, pyrite, coal, limestone, feldspar, talc and soapstone, mineral pigments, fuller's earth, mica, asbestos, and gold ore. In addition to producing the materials as indicated by the industry designation, two enterprises classified as barytes also produced mineral pigments and one enterprise classified as mineral pigments produced a small amount of manganese. The value of these by-products and other unspecified mineral products and the sums received for power sold and for work or miscellaneous services for other enterprises amounted to \$31,621, which is included in the total value of products given above. The mining industries which can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mineral industry, granite, reported products valued at \$885,663, which was 21.7 per cent of the total value of mineral products of the state. Next in importance was barytes mining in Bartow

County, where products to the value of \$722,891 were produced in 1919. This amount was 17.7 per cent of the total value of mineral products for that year in Georgia and was the largest amount produced by any state, 45.4 per cent of the total value reported for the United States (\$1,592,245).

An unimportant amount of development work was reported for 1919 on nonproductive gold-mining property.

The preponderance of the corporate form of organization among the operators of mining enterprises is shown in Table 3. Corporations conducted 70.3 per cent of all the mining enterprises in the state in 1919, employed 84.2 per cent of the average number of wage earners, and reported 84.4 per cent of the total value of products.

The relatively large number of small enterprises as determined by the number of wage earners employed is shown in Table 4. Of the total number of enterprises in the state, 94.6 per cent were reported as having fewer than 101 wage earners and these enterprises employed 76.8 per cent of the total number of wage earners. Only four enterprises, or 5.4 per cent of the total number, had more than 100 wage earners each, and these employed 23.2 per cent of the total number of wage earners.

Table 5 shows that in about 40 per cent of the enterprises and for nearly half of the wage earners in all the mining industries in the state in 1919 the hours of labor were 44 to 53 per week. In a larger number of enterprises, but for a slightly smaller portion of the total number of wage earners, the hours per week were between 54 and 62.

The statistics for wage earners presented in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

MINES AND QUARRIES—GEORGIA.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1920.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1920			1919	1920	
Number of enterprises.....	74	92		Capital.....	\$6,184,470	\$11,475,710	-46.1
Number of mines and quarries.....	82	109	-24.8	Principal expenses:			
Persons engaged.....	2,008	3,686	-28.3	Salaries.....	855,012	189,906	86.9
Proprietors and firm members, total.....	33	58		Wages.....	2,017,460	1,278,159	57.8
Number performing manual labor in or about the mines and quarries.....	4	12		Contract work.....	85,295	1,908	
Salaried employees.....	178	195	-8.7	Supplies and materials.....	608,766	254,021	139.7
Wage earners (average number).....	2,397	3,388	-29.1	Fuel and power.....	350,019	146,066	142.7
Power used (horsepower).....	13,026	10,668	21.8	Royalties and rents.....	155,833	55,717	165.4
				Taxes.....	54,360	13,236	310.7
				Value of products.....	4,062,152	2,874,595	42.0

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.  
<sup>2</sup> Includes cost of ore purchased.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	74	2,397	100.0	\$4,062,152	100.0	Bauxite.....	4	150	6.3	\$296,261	7.3
Granite.....	20	590	24.2	885,663	21.7	Iron ore.....	9	215	9.0	283,457	6.9
Barytes.....	7	265	11.1	722,891	17.7	Limestone.....	5	80	3.3	174,821	4.3
Clay.....	11	465	19.4	710,004	17.4	All other industries <sup>1</sup> .....	18	642	26.8	1,009,025	24.7

<sup>1</sup> Includes enterprises in industries as follows: Asbestos, 1; coal, bituminous, 1; feldspar, 1; fuller's earth, 1; gold and silver, lode mines, 1; marble, 1; mica, 5; mineral pigments, 2; pyrite, 3; talc and soapstone, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	74	2,397	\$4,062,152	\$55,164	100.0	100.0	100.0
Corporation.....	52	2,019	3,446,364	66,276	70.3	84.2	84.4
Individual.....	13	206	351,304	27,023	17.6	8.6	8.6
Firm.....	9	172	284,484	31,609	12.2	7.2	7.0
GRANITE.....	20	590	885,663	44,283	100.0	100.0	100.0
Corporation.....	9	388	640,819	71,202	45.0	66.9	72.4
Individual.....	7	102	155,295	22,185	35.0	17.6	17.5
Firm.....	4	90	89,549	22,887	20.0	15.5	10.1



MINES AND QUARRIES—GEORGIA.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	74	100.0	2,397	100.0	<b>BARYTES</b> .....	7	100.0	265	100.0
1 to 5.....	8	10.8	22	0.9	1 to 5.....	1	14.3	4	1.5
6 to 20.....	30	40.5	391	16.3	21 to 50.....	4	57.1	154	58.1
21 to 50.....	23	31.1	789	32.9	51 to 100.....	2	28.6	107	40.4
51 to 100.....	9	12.2	639	26.7	<b>IRON ORE</b> .....	9	100.0	215	100.0
101 to 500.....	4	5.4	556	23.2	6 to 20.....	5	55.6	79	36.7
<b>GRANITE</b> .....	20	100.0	580	100.0	21 to 50.....	4	44.4	136	63.3
1 to 5.....	3	15.0	10	1.7	<b>BAUXITE</b> .....	4	100.0	150	100.0
6 to 20.....	8	40.0	89	15.3	6 to 20.....	2	50.0	21	14.0
21 to 50.....	5	25.0	176	30.3	21 to 50.....	1	25.0	31	20.7
51 to 100.....	4	20.0	305	52.6	51 to 100.....	1	25.0	98	65.3
<b>CLAY</b> .....	11	100.0	465	100.0	<b>LIMESTONE</b> .....	5	100.0	80	100.0
6 to 20.....	4	36.4	58	12.5	1 to 5.....	1	20.0	1	1.2
21 to 50.....	4	36.4	153	32.9	6 to 20.....	3	60.0	44	55.0
51 to 100.....	2	18.2	129	27.7	21 to 50.....	1	20.0	33	48.8
101 to 500.....	1	9.1	125	26.9					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—						INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—					
	Enterprises.	Wage earners.	44 to 53.		54 to 62.		72 to 84.			Enterprises.	Wage earners.	44 to 53.		54 to 62.		72 to 84.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.				Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
<b>All industries</b> .....	74	2,397	29	1,186	44	1,163	1	48	Iron ore.....	9	215	2	77	7	138	.....	.....
Granite.....	20	580	14	454	6	126	.....	.....	Bauxite.....	4	150	2	21	2	129	.....	.....
Clay.....	11	465	2	168	9	297	.....	.....	Limestone.....	5	80	1	35	4	45	.....	.....
Barytes.....	7	265	2	97	4	120	1	48	All other industries.....	18	642	6	334	12	308	.....	.....

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries</b> .....	2,397	<b>2,386</b>	2,408	<i>2,393</i>	2,339	2,288	2,328	2,501	<b>2,566</b>	2,510	2,479	<i>2,471</i>	2,275	87.8
Granite.....	580	<b>441</b>	478	<i>354</i>	547	597	608	651	710	657	604	<i>500</i>	573	62.1
Clay.....	465	<b>453</b>	437	<i>436</i>	496	470	457	436	465	476	475	<i>430</i>	456	59.0
Barytes.....	265	<b>261</b>	284	<i>253</i>	240	214	274	272	266	277	277	<i>238</i>	273	74.0
Iron ore.....	215	<b>250</b>	240	<i>245</i>	212	180	182	241	218	225	213	<i>168</i>	211	64.8
Bauxite.....	150	<b>127</b>	124	<i>138</i>	129	123	114	136	179	<b>309</b>	196	<i>169</i>	165	87.0
Limestone.....	80	<b>94</b>	86	<i>90</i>	93	65	93	86	71	63	61	<i>67</i>	82	64.2
All other industries.....	642	<b>761</b>	750	<i>697</i>	628	639	600	629	677	611	653	<i>544</i>	516	67.7

MINES AND QUARRIES—GEORGIA.

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TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES							
	Total.	Granite.	Barytes.	Clay.	Bauxite.	Iron ore.	Limestone.	All other. <sup>1</sup>
Number of enterprises.....	74	20	7	11	4	9	5	18
Number of mines and quarries.....	82	20	10	11	9	9	5	18
Capital.....	\$6,184,470	\$882,638	\$278,014	\$1,075,074	\$315,757	\$215,516	\$303,980	\$3,113,491
Principal expenses:								
Salaries and wages—								
Officers.....	\$137,568	\$25,609	\$9,734	\$33,010	\$10,783	\$867	\$14,100	\$44,415
Superintendents and managers.....	\$127,848	\$15,000	\$18,437	\$33,047	\$17,000	\$10,140	\$8,216	\$26,008
Technical employees.....	\$16,519	\$6,600	\$2,500	\$600	\$2,028	\$743		\$4,060
Clerks, etc.....	\$73,078	\$3,883	\$22,561	\$8,816	\$3,642	\$3,606	\$1,655	\$23,916
Wage earners.....	\$2,017,460	\$536,599	\$227,871	\$399,155	\$144,125	\$131,232	\$69,337	\$519,091
Supplies and materials.....	\$591,266	\$84,311	\$147,675	\$181,286	\$14,075	\$38,741	\$23,056	\$102,122
Cost of ore purchased.....	\$17,500		\$17,500					
Fuel.....	\$296,647	\$65,909	\$19,516	\$96,821	\$17,429	\$39,183	\$8,294	\$59,496
Power.....	\$69,372	\$21,216	\$16,127				\$9,364	\$12,665
Royalties and rents.....	\$155,833	\$34,390	\$29,895	\$26,030	\$20,544	\$17,714	\$5,059	\$22,201
Taxes.....	\$54,360	\$5,317	\$5,722	\$9,756	\$4,063	\$21,178	\$381	\$7,943
Contract work.....	\$35,295		\$484				\$14,325	\$30,486
Expenditures for development (included in the above items) ..	\$77,759	\$9,383	\$2,906	\$9,445		\$3,000		\$63,625
Value of products.....	\$4,082,152	\$885,663	\$722,891	\$710,004	\$296,261	\$283,487	\$174,821	\$1,609,025
Persons engaged in industry.....	2,608	631	289	495	165	229	99	700
Proprietors and firm members (total).....	33	15	4	3	2	2	1	6
Number performing manual labor.....	4	3						1
Salaries officers.....	45	13	4	7	2		7	12
Superintendents and managers.....	68	9	9	13	6		6	14
Technical employees.....	8	3	1	1	1		1	1
Clerks, etc.....	62	11	6	6	4		5	25
Wage earners (average number).....	2,397	580	265	465	150	215	80	642
Wage earners by occupation (Dec. 15):								
Above ground (total).....	2,382	651	300	487	171	225	102	446
Below ground (total).....	273					22		251
Foremen, shift bosses, etc.—								
Above ground.....	81	24	10	11	10	7	3	16
Below ground.....	14					2		12
Engineers, hoistmen, electricians, mechanics, etc.—								
Above ground.....	285	45	53	43	10	36	8	90
Below ground.....	3							3
Miners, quarrymen, and drillmen, including their helpers—								
Above ground.....	673	296	13	142	93	34		95
Below ground.....	157					20		137
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—								
Above ground.....	197	25	40	10	20	67	11	24
Below ground.....	44							44
Muckers, loaders, laborers, and others not classified—								
Above ground.....	761	124	143	233	25	34	80	122
Below ground.....	55							55
Wage earners employed in mills and beneficiating plants—								
Above ground.....	385	137	41	48	13	47		99
Number of females included in wage earners reported above—								
Above ground.....	15							15
Mineral land operated..... acres.....	37,736	5,072	1,296	3,298	2,062	2,770	242	22,996
Land controlled, total..... acres.....	55,608	5,000	1,373	3,313	12,376	3,170	242	30,044
Mineral land owned.....	22,095	385	644	1,031	258	2,160	120	17,497
Mineral land leased.....	15,651	4,687	652	2,267	1,804	610	122	5,499
Timber and other lands owned and leased.....	17,862	8	77	15	10,314	400		7,048
Power used: Aggregate horsepower.....	13,026	3,863	2,100	1,366	381	1,150	1,135	2,971
Prime movers (horsepower, total).....	9,502	2,534	1,295	1,366	381	1,150	435	2,341
Steam engines—								
Number.....	129	25	20	24	19	16	4	21
Horsepower.....	7,909	2,507	1,230	1,225	375	1,150	435	987
Steam turbines—								
Number.....	1			1				
Horsepower.....	100			100				
Internal-combustion engines—								
Number.....	25	4	1	10	2			8
Horsepower.....	393	27	15	41	6			304
Water wheels and turbines—								
Number.....	7		1					6
Horsepower.....	1,100		80					1,060
Purchased power (horsepower, total).....	3,524	1,329	865				700	630
Electric motors operated by purchased current—								
Number.....	62	18	23				4	17
Horsepower.....	3,494	1,299	865				700	630
Other equipment operated by purchased power—								
Horsepower.....	30	30						
Electric motors run by current generated by enterprise using:								
Number.....	31		6	8		1		16
Horsepower.....	3,797		225	170		50		3,352
Fuel used:								
Coal, bituminous..... tons, 2,000 pounds.....	55,354	11,766	3,012	18,061	1,430	7,361	1,710	12,014
Wood..... cords.....	6,442	30		250	5,803			359
Fuel oils..... barrels.....	397			56				337
Gasoline and other volatile oils..... barrels.....	822	178	200	156	100			188

<sup>1</sup> Includes enterprises as follows: Asbestos, 1; coal, bituminous, 1; feldspar, 1; fuller's earth, 1; gold and silver, lode mines, 1; marble, 1; mica, 5; mineral pigments, 2; pyrite, 3; talc and soapstone, 2.

## IDAHO.

Idaho, which ranks twelfth among the states in size (land area 83,354 square miles) and forty-third in population (431,866 in 1920), ranked twenty-eighth in value of mineral products for 1919. The state ranked thirty-fourth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total amount received for products by the operators of mines and quarries in Idaho in 1919 was \$11,840,301, which was an increase of 36.9 per cent as compared with the value of products reported at the census of 1909. The value of products reported for 1919 includes a small amount received for custom milling and for miscellaneous services furnished other enterprises.

The increase in value of products and the increases in salaries, wages, cost of supplies and materials and fuel and power, as shown in Table 1, are largely due to general price increases during the decade and therefore can not be used as a measure of growth or progress of mining. Furthermore, the large decreases shown in the number of enterprises, number of individual mines and quarries operated, and number of wage earners employed are a reflection of temporarily adverse conditions and can not properly be used to measure the decline of mining in Idaho during the census period. The addition of Federal income taxes since 1909 accounts for the large increase in taxes.

The mining industries reported for 1919, classified by principal products and listed in order of value of products, were lead and zinc, gold and silver (lode), copper, limestone, placer gold, sandstone, phosphate rock, iron ore, basalt, bituminous coal, and abrasive materials. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

Out of a total of 82 productive mining enterprises reported for the state of Idaho in 1919, 11 were engaged in placer mining and 60 in mining ores of gold, silver, copper, lead, and zinc. The lode-mining industries, reported from 15 counties, employed 91.8 per cent of the total number of wage earners and reported products to the value of \$11,266,947, or 95.2 per cent of the total. The mining of lead and zinc was the most important of the lode-mining industries in Idaho, which ranked third among the states in value of products of lead and zinc mines. In this industry there were 20 enterprises which employed 1,820 wage earners, or 74.1 per cent of the total number, and

reported products valued at \$9,529,723, or 80.5 per cent of the total value of products. Shoshone County was the principal source of lead and zinc ores.

In addition to the operation of producing mines and quarries, a large amount of work was done in Idaho on mineral properties which were not productive during the year. Fifty such enterprises were reported—1 cobalt mine; 1 quicksilver mine; 45 gold, silver, copper, lead or zinc lode mines, and 3 placer mines. These enterprises, with a combined capital of \$8,973,508, employed 373 wage earners and expended \$1,097,535 for development. These figures represent 13.2 per cent of the aggregate number of wage earners and 11.6 per cent of the aggregate expenditures reported for all mining operations in the state.

The form or character of organizations operating mining enterprises in Idaho in 1919 is shown in Table 3, which brings out the preponderance of incorporated enterprises over those of other forms of organization. Corporations conducted 61 per cent of the enterprises, employed 89.3 per cent of the total number of wage earners, and reported 89.9 per cent of the total value of products.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the 82 mining enterprises in Idaho, 13 had no wage earners and 61 had fewer than 101 each and employed only 27.9 per cent of the total number of wage earners. On the other hand, 8 enterprises had more than 100 wage earners each, and these enterprises employed 72 per cent of the total number of wage earners. In Table 4 the larger enterprises are shown in the lead and zinc and gold and silver industries.

Table 5 shows that in a majority of the enterprises employing wage earners and for about 52 per cent of the total number of wage earners, the hours of labor were 54 to 62 per week. In all other enterprises the hours were 44 to 53 per week. The 8-hour day prevailed, with a 7-day week in most of the enterprises and a 6-day week in the others.

The statistics for wage earners presented in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	82	174	-52.9	Capital.....	\$71,093,746	\$48,802,888	45.4
Number of mines and quarries.....	83	370	-77.6	Principal expenses:			
Persons engaged.....	2,759	3,594	-23.2	Salaries.....	538,071	357,578	50.4
Proprietors and firm members, total....	83	169	-50.9	Wages.....	4,201,624	4,045,547	3.9
Number performing manual labor in or about the mines and quarries.....	32	115	-72.2	Contract work.....	193,657	23,036	740.7
Salaried employees.....	221	179	23.5	Supplies and materials.....	2,026,266	1,847,458	9.7
Wage earners (average number).....	2,455	3,246	-24.4	Fuel and power.....	513,778	356,190	44.2
Power used (horsepower).....	31,239	26,278	18.9	Royalties and rents.....	182,364	27,632	500.0
				Taxes.....	649,069	158,145	310.4
				Value of products.....	11,840,301	8,649,342	36.9

<sup>1</sup> A minus sign (-) denotes decrease.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	82	2,455	100.0	\$11,840,301	100.0	Gold and silver, lode mines.....	32	349	14.2	1,306,915	11.8
Lead and zinc.....	20	1,820	74.1	9,529,723	80.5	Copper.....	8	87	3.5	340,309	2.9
						All other industries.....	22	199	8.1	573,354	4.8

<sup>1</sup> Includes enterprises in industries as follows: Abrasive materials, 1; basalt, 1; coal, bituminous, 1; gold, placer mines, 11; iron ore, 1; limestone, 3; phosphate rock, 2; sandstone, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	82	2,455	\$11,840,301	\$144,394	100.0	100.0	100.0
Corporation.....	50	2,198	10,642,595	212,852	61.0	89.3	89.9
Individual.....	11	18	34,345	3,122	13.4	0.7	0.3
Firm.....	21	244	1,163,361	55,398	25.6	9.9	9.8
GOLD AND SILVER, COPPER, LEAD AND ZINC, LODE MINES.....	60	2,256	11,266,947	137,782	100.0	100.0	100.0
Corporation.....	40	2,004	10,102,002	252,550	66.7	88.8	89.7
Individual.....	4	9	10,600	2,650	6.7	0.4	0.1
Firm.....	16	243	1,154,345	72,147	26.7	10.8	10.2

<sup>1</sup> Includes 1 other form of organization.

## MINES AND QUARRIES—IDAHO.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	82	100.0	2,455	100.0	GOLD AND SILVER, LODE MINES..	32	100.0	349	100.0
No wage earners.....	13	15.9			No wage earners.....	3	9.4		
1 to 5.....	30	36.6	60	2.5	1 to 5.....	14	43.8	31	8.9
6 to 20.....	23	28.0	288	11.7	6 to 20.....	13	40.6	147	42.1
21 to 50.....	6	7.3	197	8.0	21 to 50.....	1	3.1	50	14.3
51 to 100.....	2	2.4	141	5.7	101 to 500.....	1	3.1	121	34.7
101 to 500.....	7	8.5	1,245	50.7					
501 to 1,000.....	1	1.2	524	21.3					
LEAD AND ZINC.....	20	100.0	1,820	100.0	COPPER.....	8	100.0	87	100.0
No wage earners.....	3	15.0			1 to 5.....	4	50.0	10	11.5
1 to 5.....	5	25.0	8	0.4	6 to 20.....	2	25.0	24	27.6
6 to 20.....	2	10.0	36	2.0	21 to 50.....	2	25.0	53	60.9
21 to 50.....	2	10.0	49	2.7					
51 to 100.....	1	5.0	79	4.3					
101 to 500.....	6	30.0	1,124	61.8					
501 to 1,000.....	1	5.0	524	28.8					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—				INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—			
	Enter-prises.	Wage earners.	44 to 53.		54 to 62.			Enter-prises.	Wage earners.	44 to 53.		54 to 62.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.				Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	169	2,455	29	1,180	40	1,275	Gold and silver, lode mines	29	349	11	94	18	235
Lead and zinc.....	17	1,820	6	994	11	826	Copper.....	8	57	4	21	4	66
							All other industries.....	15	199	8	71	7	128

<sup>1</sup> Exclusive of 13 enterprises employing no wage earners in industries as follows: Abrasive materials, 1; gold and silver, lode mines, 3; gold, placer mines, 6; lead and zinc, 3.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	2,823	3,005	2,990	2,316	2,337	2,738	2,921	3,208	2,637	<i>2,103</i>	2,492	3,515	3,674	57.2
Producing enterprises.....	2,455	2,773	2,733	2,067	2,056	2,391	2,517	2,746	2,175	<i>1,648</i>	2,008	3,078	3,288	50.4
Lead and zinc.....	1,820	2,258	2,239	1,617	1,588	1,791	1,751	1,941	1,401	<i>877</i>	1,281	2,452	2,644	33.2
Gold and silver, lode mines.....	349	244	<i>207</i>	214	240	326	404	447	486	456	425	378	381	44.4
Copper.....	87	102	111	101	78	98	123	108	88	77	71	47	40	32.5
All other industries.....	199	169	176	135	150	176	239	250	220	238	231	201	203	54.0
Nonproducing enterprises.....	373	<i>233</i>	257	249	281	347	404	462	462	455	484	437	406	47.9

MINES AND QUARRIES—IDAHO.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.					Non-producing enterprises. <sup>3</sup>
		Total.	Lead and zinc.	Gold and silver, lode mines. <sup>1</sup>	Copper.	All other. <sup>2</sup>	
Number of enterprises.....	132	82	20	32	8	22	50
Number of mines and quarries.....	133	83	21	32	8	22	50
Capital.....	\$30,067,254	\$71,093,746	\$34,762,584	\$8,525,765	\$3,814,280	\$3,991,117	\$8,973,508
<b>Principal expenses:</b>							
Salaries and wages—							
Officers.....	\$104,320	\$82,515	\$57,900	\$12,193	\$3,910	\$8,512	\$21,905
Superintendents and managers.....	\$328,393	\$255,540	\$184,008	\$30,273	\$20,777	\$20,483	\$72,853
Technical employees.....	\$71,447	\$61,371	\$50,097	\$5,494	\$3,000	\$2,790	\$10,076
Clerks, etc.....	\$145,793	\$138,645	\$111,026	\$14,930	\$5,962	\$6,727	\$7,148
Wage earners.....	\$4,735,100	\$4,201,624	\$3,251,942	\$541,206	\$159,033	\$249,443	\$533,476
Supplies and materials.....	\$2,398,248	\$2,026,266	\$1,558,866	\$275,682	\$72,515	\$119,198	\$371,992
Fuel.....	\$205,852	\$159,294	\$118,176	\$17,842	\$7,663	\$15,613	\$46,558
Power.....	\$365,950	\$354,484	\$280,312	\$43,591	\$11,296	\$19,296	\$11,466
Royalties and rents.....	\$198,502	\$182,364	\$135,303	\$25,521	\$9,283	\$12,257	\$14,138
Taxes.....	\$656,020	\$649,069	\$537,512	\$94,959	\$3,951	\$12,647	\$6,951
Contract work.....	\$216,088	\$193,657	\$156,759	\$15,854	\$3,514	\$17,530	\$22,431
Expenditures for development (included in the above items).....	\$1,629,612	\$532,077	\$200,577	\$211,728	\$96,439	\$23,333	\$1,097,535
Value of products.....	\$11,840,301	\$11,840,301	\$9,529,723	\$1,396,915	\$340,309	\$573,354	.....
<b>Persons engaged in industry.....</b>	<b>3,214</b>	<b>2,759</b>	<b>1,976</b>	<b>428</b>	<b>114</b>	<b>241</b>	<b>455</b>
Proprietors and firm members (total).....	91	83	20	32	11	20	5
Number performing manual labor.....	34	32	3	17	.....	12	2
Salaried officers.....	40	27	11	9	3	4	13
Superintendents and managers.....	111	69	36	15	8	10	43
Technical employees.....	46	36	28	6	1	2	10
Clerks, etc.....	98	61	4	18	4	6	9
Wage earners (average number).....	2,828	2,456	1,820	349	87	199	373
<b>Wage earners by occupation (Dec. 15):</b>							
Above ground (total).....	1,686	1,516	1,064	135	60	267	170
Below ground (total).....	2,508	2,229	1,757	315	62	75	279
Foremen, shift bosses, etc.—							
Above ground.....	82	70	48	9	2	11	12
Below ground.....	96	80	55	16	6	3	16
Enginemen, hoistmen, electricians, mechanics, etc.—							
Above ground.....	333	296	209	41	8	38	37
Below ground.....	99	91	79	5	6	1	8
Miners, quarrymen, and drillmen, including their helpers—							
Above ground.....	161	126	16	11	6	103	25
Below ground.....	1,014	850	595	138	46	71	164
Timberman, trackmen, and men engaged in hauling, tramming, etc.—							
Above ground.....	38	32	13	6	3	10	6
Below ground.....	496	458	367	72	19	.....	38
Muckers, loaders, laborers, and others not classified—							
Above ground.....	484	394	262	21	16	95	90
Below ground.....	803	750	661	84	5	.....	53
Wage earners employed in mills and beneficiating plants—							
Above ground.....	588	588	506	47	25	10	.....
Number of females included in wage earners reported above—							
Above ground.....	26	11	3	4	3	1	15
Mineral land operated..... acres.....	48,387	27,874	10,754	6,948	1,560	8,612	20,513
Land controlled, total..... acres.....	51,928	31,260	13,035	7,618	1,585	9,022	20,068
Mineral land owned.....	42,560	24,877	10,414	6,006	1,296	7,162	17,083
Mineral land leased.....	5,927	3,097	440	942	265	1,450	2,930
Timber and other lands owned and leased.....	3,441	3,286	2,181	670	25	410	155
<b>Power used: Aggregate horsepower.....</b>	<b>34,511</b>	<b>31,239</b>	<b>25,479</b>	<b>2,693</b>	<b>985</b>	<b>2,062</b>	<b>3,272</b>
Prime movers (horsepower, total).....	5,184	2,811	1,171	377	235	1,028	2,373
Steam engines—							
Number.....	49	23	3	10	.....	10	26
Horsepower.....	2,510	1,108	138	280	.....	685	1,407
Steam turbines—							
Number.....	2	2	2	.....	.....	.....	.....
Horsepower.....	930	930	930	.....	.....	.....	.....
Internal-combustion engines—							
Number.....	47	18	2	6	6	4	29
Horsepower.....	900	364	42	44	235	43	536
Water wheels and turbines—							
Number.....	26	16	12	3	.....	1	10
Horsepower.....	844	414	61	53	.....	300	430
Purchased power (horsepower, total).....	29,327	28,428	24,308	2,316	750	1,054	899
Electric motors operated by purchased current—							
Number.....	563	545	444	54	18	29	18
Horsepower.....	29,115	28,248	24,258	2,186	750	1,054	867
Other equipment operated by purchased power—							
Horsepower.....	212	180	50	130	.....	.....	32
Electric motors run by current generated by enterprise using:							
Number.....	19	19	7	9	.....	3	.....
Horsepower.....	1,120	1,120	750	260	.....	110	.....
<b>Fuel used:</b>							
Coal, bituminous..... tons, 2,000 pounds.....	17,395	15,360	12,432	383	174	2,371	2,035
Coke..... tons, 2,000 pounds.....	90	84	84	.....	.....	.....	6
Wood..... cords.....	7,317	3,891	1,510	1,918	25	432	3,426
Fuel oils..... barrels.....	1,029	726	561	.....	165	.....	308
Gasoline and other volatile oils..... barrels.....	1,099	723	290	58	343	32	376

<sup>1</sup> Includes 1 reduction mill operated independently of mines and the working of 2 dumps and old tailings.

<sup>2</sup> Includes enterprises as follows: Abrasive materials, 1; basalt, 1; bituminous coal, 1; gold, placer mines, 11; iron ore, 1; limestone, 3; phosphate rock, 2; sandstone, 2.

<sup>3</sup> Includes enterprises as follows: Gold, silver, copper, lead, or zinc, lode mines, 45; gold, placer mines, 3; quicksilver, 1; rare metals (cobalt), 1.

## ILLINOIS.

Illinois, which ranks twenty-third in size (land area 56,043 square miles) and third in population (6,485,280 in 1920), ranked fourth among the states in value of mineral products for the year 1919. It ranked third in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross value of mineral products for the state in 1919 was \$178,673,065, an increase of 133.1 per cent over the value reported at the census of 1909. Deducting from this gross value \$91,659, the value of natural gas sold by some producers for use as material or for resale by others, leaves \$178,581,406, the net value of the products.

Increases in wages, cost of supplies, fuel and power, and the value of products as shown in the comparative summary for 1909 and 1919, Table 1, are largely due to general price increases and are not a measure of the growth of mining during the census period 1909-1919. Nor, on the other hand, is any decline in mining indicated by the decrease in the number of enterprises, which may be a reflection of adverse industrial conditions during 1919 or the result of consolidation of operations. Probably the most significant fact shown by this table is the small increase in the number of wage earners. The addition of Federal income and excess-profits taxes since 1909 will account for the increase in taxes.

The industries reported for 1919, ranked according to value of products, were coal mining, petroleum and natural-gas production, limestone quarrying, fluorspar mining, sandstone quarrying, lead and zinc mining, clay mining, mining of abrasive materials (tripoli), and pyrite mining. Besides producing the materials indicated by the industry designations, two clay-mining enterprises produced coal as a by-product, one coal mine produced clay and two produced pyrite, and three fluorspar enterprises produced lead-ore concentrates. The aggregate value of these mineral by-products was \$108,124, and this amount, together with \$113,876 received for other unspecified products and for power sold and work or miscellaneous services for other enterprises, is included in the total value of products for the industries.

The relative importance of the mining industries may be variously determined by use of different bases of rank; in Table 2 they are ranked by value of products.

The principal mining industry, coal, reported products valued at \$138,767,835, which was 77.7 per cent of the total value of products of all mining industries. Illinois ranked third among the states in the value of products of coal mines for 1919. The coal-producing area of the state is part of the Eastern Interior Coal Field, which extends into Indiana and Ken-

tucky, and covers approximately 35,000 square miles in 48 counties in Illinois and furnishes bituminous coal chiefly for steam and domestic use. Petroleum and natural-gas production ranked second in importance, with an output valued at \$31,171,904 (net), placing Illinois ninth among the states in this industry. The productive oil and gas operations in Illinois extend over an area of approximately 4,500 square miles, in 16 counties, which is part of an oil field including also the southwestern counties of Indiana. The quarrying industries are well distributed throughout the state and furnish not only stone for construction work, but also limestone for various other purposes, and sandstone from which a large part of the United States silica supply is derived. Illinois is the leading state in the Union in production of fluorspar, which is obtained in Hardin County.

The preponderance of the corporation among the mining organizations is brought out by Table 3. Corporations controlled 59.2 per cent of all the mining enterprises in the state in 1919, and represented 96.9 per cent of the average number of wage earners, and 96.2 per cent of the total value of products.

The relatively large number of small enterprises as determined by the number of wage earners employed is shown in Table 4. Of the total number of enterprises in this state, 72.8 per cent were in classes having no wage earners or fewer than 101, while such enterprises employed only 10.9 per cent of the total number of wage earners. On the other hand, enterprises employing more than 100 wage earners constituted only 27.3 per cent of the total number of enterprises but employed 89 per cent of the total number of wage earners. The coal-mining industry included 95.7 per cent of these larger enterprises.

Table 5 shows that in a majority of enterprises, and for about 80 per cent of the wage earners in all the mining industries in the state in 1919, the hours of labor were from 44 to 53 hours per week, or that the 8-hour day prevailed. In the coal-mining industry these hours were reported for approximately 85 per cent of the enterprises and wage earners, but in the petroleum and natural-gas and other industries presented separately the normal hours of labor were longer.

The statistics for wage earners given in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The extremely low minimum in the coal industry, which affects the figures for all industries combined, was very abnormal and was the result of the great November strike.

Table 7 presents statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	772	915	-15.6	Capital.....	\$231,836,571	\$116,959,707	98.2
Number of mines and quarries.....	590	759	-22.3	Principal expenses:			
Number of petroleum and natural-gas wells.....	16,496	10,918	51.1	Salaries.....	10,123,866	3,112,655	225.2
Number of natural-gas gasoline plants.....	72	( <sup>2</sup> )	.....	Wages.....	94,178,504	46,378,727	103.1
Persons engaged.....	84,309	78,039	10.9	Contract work.....	431,555	2,376,966	-81.8
Proprietors and firm members, total.....	691	1,425	-51.5	Supplies and materials <sup>3</sup> .....	18,807,752	8,574,817	119.3
Number performing manual labor in or about the mines, quarries, and wells.....	126	401	-68.6	Fuel and power.....	6,784,479	1,326,880	336.3
Salaried employees.....	4,495	2,523	77.8	Royalties and rents.....	6,636,178	3,579,472	85.4
Wage earners (average number).....	79,123	72,086	9.8	Taxes.....	6,890,455	287,460	.....
Power used (horsepower).....	318,231	225,330	41.2	Value of products.....	178,673,065	76,658,974	133.1

<sup>1</sup> A minus sign (-) denotes decrease.  
<sup>2</sup> Figures not available.

<sup>3</sup> Includes for 1919 cost of natural gas, and for 1909 cost of ore and natural gas, purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	772	79,123	100.0	\$178,673,065	100.0	Sandstone.....	15	288	0.4	1,329,399	0.7
Coal, bituminous.....	447	73,780	93.2	138,767,885	77.7	Lead and zinc.....	6	239	0.3	621,296	0.3
Petroleum and natural gas.....	296	2,752	3.5	31,263,563	17.5	Clay.....	10	154	0.2	472,284	0.3
Limestone.....	41	1,244	1.6	3,776,626	2.1	Abrasive materials.....	5	21	( <sup>1</sup> )	45,205	( <sup>1</sup> )
						All other industries <sup>2</sup> .....	12	645	0.8	2,366,867	1.3

<sup>1</sup> Less than one-tenth of 1 per cent.

<sup>2</sup> Includes enterprises in industries as follows: Fluorspar, 11; pyrite, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	772	79,123	\$178,673,065	\$231,442	100.0	100.0	100.0
Corporation.....	457	78,691	171,829,643	375,995	59.2	96.9	96.2
Individual.....	120	1,165	2,457,327	20,478	15.5	1.5	1.4
Firm.....	166	963	3,541,544	21,335	21.5	1.2	2.0
Other.....	29	304	844,551	29,122	3.8	0.4	0.5
COAL, BITUMINOUS.....	447	73,780	138,767,885	310,448	100.0	100.0	100.0
Corporation.....	320	71,763	135,182,771	422,446	71.6	97.3	97.4
Individual.....	65	996	1,734,925	26,691	14.5	1.3	1.2
Firm.....	54	762	1,535,811	23,441	12.1	1.0	1.1
Other.....	8	259	314,328	39,291	1.8	0.4	0.2
PETROLEUM AND NATURAL GAS.....	296	2,752	31,263,563	182,478	100.0	100.0	100.0
Corporation.....	74	2,498	28,348,300	383,065	81.4	90.6	90.7
Individual.....	37	42	426,968	11,540	15.7	1.5	1.4
Firm.....	104	172	1,958,052	18,827	44.1	6.2	6.8
Other.....	21	45	580,228	25,249	3.9	1.6	1.7
LIMESTONE AND SANDSTONE.....	56	1,582	5,108,015	91,179	100.0	100.0	100.0
Corporation.....	42	1,465	4,992,088	118,859	75.0	95.6	97.8
Individual.....	9	57	97,247	10,805	18.1	3.7	1.9
Firm.....	5	10	16,682	3,536	3.9	0.7	0.3
CLAY.....	10	154	472,284	47,228	100.0	100.0	100.0
Corporation.....	5	110	327,579	65,616	50.0	71.4	69.4
Individual <sup>1</sup> .....	5	44	144,705	28,941	50.0	23.6	30.6

<sup>1</sup> Includes 2 firms.



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TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	772	100.0	79,123	100.0	LIMESTONE.....	41	100.0	1,244	100.0
No wage earners.....	43	5.6	.....	.....	No wage earners.....	3	7.3	.....	.....
1 to 5.....	263	34.1	568	0.7	1 to 5.....	10	24.4	30	2.4
6 to 20.....	122	15.8	1,378	1.7	6 to 20.....	10	24.4	120	9.6
21 to 50.....	77	10.0	2,621	3.3	21 to 50.....	11	26.8	400	32.2
51 to 100.....	56	7.3	4,099	5.2	51 to 100.....	4	9.8	298	24.0
101 to 500.....	186	24.1	45,287	57.2	101 to 500.....	3	7.3	396	31.8
501 to 1,000.....	18	2.3	11,867	15.0					
Over 1,000.....	7	0.9	13,303	16.8	SANDSTONE.....	15	100.0	288	100.0
COAL, BITUMINOUS.....	447	100.0	73,790	100.0	1 to 5.....	8	53.3	23	8.0
No wage earners.....	3	0.7	.....	.....	6 to 20.....	3	20.0	35	12.2
1 to 5.....	77	17.2	229	0.3	21 to 50.....	2	13.3	86	29.9
6 to 20.....	73	16.3	839	1.1	51 to 100.....	2	13.3	144	50.0
21 to 50.....	46	10.3	1,570	2.1					
51 to 100.....	46	10.3	3,402	4.6	LEAD AND ZINC.....	6	100.0	239	100.0
101 to 500.....	178	39.8	44,018	59.7	6 to 20.....	2	33.3	17	7.1
501 to 1,000.....	18	4.0	11,867	16.1	21 to 50.....	2	33.3	81	33.9
Over 1,000.....	6	1.3	11,855	16.1	51 to 100.....	2	33.3	141	59.0
PETROLEUM AND NATURAL GAS.....	236	100.0	2,752	100.0					
No wage earners.....	35	14.8	.....	.....					
1 to 5.....	162	68.6	267	9.7					
6 to 20.....	22	9.3	233	8.5					
21 to 50.....	11	4.7	324	11.8					
51 to 100.....	2	0.8	114	4.1					
101 to 500.....	3	1.3	366	13.3					
Over 1,000.....	1	0.4	1,448	52.6					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	1,729	79,123	33	5,922	26	2,872	445	66,032	126	3,799	30	167	69	311
Coal, bituminous.....	444	73,780	27	5,910	19	2,846	391	64,905	7	119	.....	.....	.....	.....
Petroleum and natural gas.....	201	2,752	5	7	6	6	26	242	65	1,999	30	157	69	311
Limestone.....	38	1,244	.....	.....	.....	.....	7	75	31	1,169	.....	.....	.....	.....
Sandstone.....	15	288	.....	.....	.....	.....	5	41	10	247	.....	.....	.....	.....
Lead and zinc.....	6	239	.....	.....	.....	.....	2	89	4	150	.....	.....	.....	.....
All other industries.....	26	820	1	5	1	20	14	680	9	115	.....	.....	.....	.....

<sup>1</sup> Exclusive of 43 enterprises employing no wage earners in industries as follows: Abrasive materials, 2; coal, bituminous, 3; limestone, 3; petroleum and natural gas, 35.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		Janu-ary.	Febru-ary.	March.	April.	May.	June.	July.	August.	Sep-tember.	Octo-ber.	Novem-ber.	Decem-ber.	
All industries.....	79,123	89,224	86,968	85,233	82,026	80,235	79,033	81,643	83,906	87,056	89,321	<b>10,789</b>	88,029	15.8
Coal, bituminous.....	73,780	84,197	82,192	80,214	76,796	74,761	73,604	76,052	78,218	81,362	83,739	<b>11,523</b>	82,902	13.4
Petroleum and natural gas.....	2,752	2,753	2,695	2,735	2,709	2,693	2,728	2,780	2,874	2,827	2,787	2,736	2,757	92.7
Limestone.....	1,244	834	810	1,054	1,279	1,433	1,389	1,461	1,438	1,452	1,401	1,334	983	54.4
Sandstone.....	288	307	284	269	247	269	276	283	284	297	327	333	285	75.3
Lead and zinc.....	239	234	235	237	248	248	237	233	245	238	243	229	231	87.4
Clay.....	154	143	121	120	113	140	164	168	164	171	170	188	186	60.1
Abrasive materials.....	21	22	22	22	21	21	23	23	23	23	17	8	17	24.2
All other industries.....	645	734	629	533	613	645	612	623	660	676	657	636	673	79.3

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TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.								
	Total.	Coal, bituminous.	Petroleum and natural gas.	Limestone.	Sandstone.	Lead and zinc.	Clay.	Abrasive materials.	All other. <sup>1</sup>
Number of enterprises.....	772	447	236	41	15	6	10	5	12
Number of mines and quarries.....	590	490	.....	41	15	6	10	5	14
Number of petroleum and natural-gas wells.....	16,498	.....	16,498	.....	.....	.....	.....	.....	.....
Number of natural-gas gasoline plants.....	72	.....	72	.....	.....	.....	.....	.....	.....
<b>Capital.....</b>	<b>\$231,838,571</b>	<b>\$166,666,312</b>	<b>\$46,207,394</b>	<b>\$8,810,097</b>	<b>\$3,788,564</b>	<b>\$460,642</b>	<b>\$1,472,582</b>	<b>\$124,500</b>	<b>\$4,303,480</b>
<b>Principal expenses:</b>									
<b>Salaries and wages—</b>									
Officers.....	\$3,261,099	\$2,653,966	\$263,292	\$183,898	\$101,243	\$600	\$25,800	\$900	\$31,400
Superintendents and managers.....	\$3,654,908	\$3,094,822	\$283,255	\$87,472	\$41,695	\$28,559	\$18,976	\$2,400	\$95,027
Technical employees.....	\$574,419	\$542,523	.....	\$11,805	.....	\$6,326	.....	.....	\$13,766
Clerks, etc.....	\$2,688,442	\$2,262,685	\$196,921	\$115,634	\$20,260	\$7,642	\$9,583	\$1,060	\$20,697
Wage earners.....	\$94,178,504	\$87,796,328	\$3,277,515	\$1,447,647	\$335,756	\$312,046	\$173,976	\$18,527	\$816,709
<b>Supplies and materials.....</b>	<b>\$18,716,093</b>	<b>\$15,345,498</b>	<b>\$1,692,172</b>	<b>\$835,598</b>	<b>\$182,443</b>	<b>\$136,213</b>	<b>\$61,191</b>	<b>\$4,573</b>	<b>\$458,405</b>
Cost of natural gas purchased as material and resold.....	\$91,659	.....	\$91,659	.....	.....	.....	.....	.....	.....
Fuel.....	\$4,810,013	\$4,154,744	\$151,570	\$231,915	\$127,258	\$4,820	\$24,505	\$3,110	\$112,091
Power.....	\$974,466	\$968,142	\$3,079	\$158,053	\$49,089	\$95,826	\$500	.....	\$1,077
Royalties and rents.....	\$6,636,176	\$1,704,594	\$4,768,871	\$34,501	\$9,853	\$51,142	\$66,094	\$621	\$500
Taxes.....	\$6,890,456	\$4,487,294	\$1,970,994	\$45,598	\$42,029	\$77	\$14,854	\$281	\$328,528
Contract work.....	\$431,555	\$68,942	\$359,082	.....	\$3,531	.....	.....	.....	.....
<b>Expenditures for development (included in the above items).....</b>	<b>\$4,331,319</b>	<b>\$2,959,034</b>	<b>\$1,133,165</b>	<b>\$13,483</b>	<b>\$16,450</b>	<b>\$16,534</b>	.....	<b>\$718</b>	<b>\$191,935</b>
<b>Value of products.....</b>	<b>\$178,678,065</b>	<b>\$188,787,835</b>	<b>\$31,263,563</b>	<b>\$3,776,626</b>	<b>\$1,329,389</b>	<b>\$621,296</b>	<b>\$472,284</b>	<b>\$45,205</b>	<b>\$2,396,867</b>
<b>Persons engaged in industry.....</b>	<b>84,309</b>	<b>77,825</b>	<b>3,506</b>	<b>1,448</b>	<b>363</b>	<b>282</b>	<b>186</b>	<b>28</b>	<b>701</b>
Proprietors and firm members (total).....	691	199	449	14	13	2	8	2	4
Number performing manual labor.....	126	114	2	3	3	.....	2	2	.....
<b>Skilled officers.....</b>	<b>685</b>	<b>561</b>	<b>44</b>	<b>42</b>	<b>22</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>8</b>
Superintendents and managers.....	1,561	1,350	112	49	10	9	10	2	19
Technical employees.....	248	229	.....	5	.....	3	.....	.....	11
Clerks, etc.....	2,001	1,706	149	94	20	8	8	2	14
Wage earners (average number).....	79,123	73,780	2,752	1,244	288	239	154	21	645
<b>Wage earners, by occupation (Dec. 15):</b>									
Above ground.....	14,890	9,866	2,758	1,342	208	92	126	25	373
Below ground.....	75,566	75,045	.....	.....	.....	129	62	7	323
<b>Foremen, shift bosses, etc.—</b>									
Above ground.....	485	375	.....	62	19	1	5	.....	23
Below ground.....	980	898	.....	.....	.....	7	2	.....	23
<b>Enginemen, hoistmen, electricians, mechanics, etc.—</b>									
Above ground.....	6,667	3,827	2,391	249	59	18	16	.....	107
Below ground.....	2,207	2,174	.....	.....	.....	.....	1	.....	82
<b>Miners, quarrymen, and drillmen, including their helpers—</b>									
Above ground.....	729	253	.....	387	41	.....	29	.....	19
Below ground.....	43,002	42,898	.....	.....	.....	23	23	5	63
<b>Timbermen, trackmen, and men engaged in hauling, tramming, etc.—</b>									
Above ground.....	924	749	.....	118	33	9	.....	8	7
Below ground.....	16,822	16,645	.....	.....	.....	52	8	.....	117
<b>Muckers, loaders, laborers, and others not classified—</b>									
Above ground.....	5,298	4,126	367	523	62	12	74	.....	134
Below ground.....	12,606	12,440	.....	.....	.....	47	28	2	83
<b>Wage earners employed in mills and beneficiating plants—</b>									
Above ground.....	777	586	.....	3	84	52	2	17	83
Number of females included in wage earners reported above—									
Above ground.....	20	17	.....	.....	2	.....	1	.....	.....
<b>Mineral and oil land operated..... acres..</b>	<b>945,362</b>	<b>752,316</b>	<b>169,025</b>	<b>14,922</b>	<b>1,327</b>	<b>898</b>	<b>2,055</b>	<b>1,964</b>	<b>2,855</b>
<b>Land controlled, total..... acres..</b>	<b>1,051,783</b>	<b>799,060</b>	<b>169,025</b>	<b>52,900</b>	<b>1,441</b>	<b>898</b>	<b>2,118</b>	<b>2,144</b>	<b>4,197</b>
Mineral and oil land owned.....	617,833	596,082	2,424	14,348	622	368	830	1,024	2,125
Mineral and oil land leased.....	329,448	158,182	166,591	574	705	530	1,225	940	730
Timber and other lands owned and leased.....	84,502	44,826	.....	37,978	114	.....	63	180	1,342
<b>Power used: Aggregate horsepower.....</b>	<b>318,231</b>	<b>247,142</b>	<b>35,430</b>	<b>22,325</b>	<b>3,806</b>	<b>1,978</b>	<b>2,779</b>	<b>250</b>	<b>4,521</b>
Prime movers (horsepower, total).....	261,934	205,777	35,326	11,360	1,916	30	2,754	250	4,521
<b>Steam engines—</b>									
Number.....	2,077	1,609	170	161	31	1	27	2	76
Horsepower.....	208,782	186,926	3,568	9,125	1,774	80	2,742	250	4,347
<b>Steam turbines—</b>									
Number.....	42	36	.....	5	.....	.....	.....	.....	1
Horsepower.....	19,728	17,725	.....	1,953	.....	.....	.....	.....	50
<b>Internal-combustion engines—</b>									
Number.....	1,855	88	1,723	18	14	.....	2	.....	10
Horsepower.....	33,424	1,126	31,738	282	143	.....	12	.....	124
Purchased power (horsepower, total).....	56,297	41,365	104	10,965	1,890	1,948	25	.....	.....
Electric motors operated by purchased current—									
Number.....	1,432	1,070	8	222	70	61	1	.....	.....
Horsepower.....	56,267	41,365	74	10,965	1,890	1,948	25	.....	.....
Other equipment operated by purchased power (horsepower).....	30	.....	30	.....	.....	.....	.....	.....	.....
Electric motors run by current generated by enterprise using:									
Number.....	3,218	3,165	2	.....	8	.....	17	.....	26
Horsepower.....	97,160	95,916	25	.....	341	.....	478	.....	400
<b>Fuel used:</b>									
Coal, bituminous..... tons, 2,000 pounds..	2,092,655	1,946,807	3,385	67,618	33,839	786	8,387	1,150	81,093
Coke..... tons, 2,000 pounds..	400	.....	.....	.....	.....	.....	.....	.....	.....
Fuel oils..... barrels..	7,586	370	6,777	53	340	.....	.....	.....	96
Gasoline and other volatile oils..... barrels..	4,272	1,830	1,561	507	114	.....	10	.....	230
Natural gas..... 1,000 cubic feet..	1,809,962	.....	1,809,962	.....	.....	.....	.....	.....	.....

<sup>1</sup> Includes enterprises as follows: Fluorspar, 11; pyrite, 1.

## INDIANA.

Indiana, which ranks thirty-seventh among the states in size (land area, 36,045 square miles) and eleventh in population (2,930,390 in 1920), ranked fourteenth in value of mineral products for 1919. The state ranked ninth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross value of the products of all mines, quarries, and wells in Indiana in 1919 was \$52,840,252. Deducting from this amount a duplication of \$50,546 in the value of natural gas, which was sold by some producers and resold by others, leaves \$52,789,706 as the net value of products. This was an increase of 140.9 per cent over the corresponding figures for 1909.

Growth of the mining industries in Indiana is indicated by the increase in the total number of persons engaged and the number of wage earners employed as shown by Table 1, a comparative summary for 1919 and 1909. The large increases shown in the principal expenses of operation and value of products are due, in part, to general price increases and do not correctly indicate the growth of the industries. The decrease in the number of individual mines and quarries operated, which may be chiefly due to combinations and suspension of small operations, is not significant of decline in the mining and quarrying; but the large decrease in the number of wells clearly reflects the decrease in petroleum and natural-gas production in Indiana during the decade.

The mining and quarrying industries reported for 1919, ranked according to value of products, were bituminous coal, limestone, petroleum and natural gas, clay, and sandstone. In addition to the products indicated by the industry designations six coal enterprises reported production of clay and one clay enterprise, coal. The value of products stated include \$61,801, the value of these by-products and the amount received by some enterprises for power sold or miscellaneous services furnished to other enterprises.

In Table 2 the industries in the state which can be shown without the disclosure of individual operations are arranged in order of rank by value of products.

The three principal mineral industries, bituminous coal, limestone, and petroleum and natural gas, accounted for 99.8 per cent of the total value of mineral products of the state in 1919. Coal mining was the leading industry, reporting products valued at \$45,492,726, which was 86.1 per cent of the gross value of mineral products. Indiana ranked sixth among the states in value of products of coal mines for 1919. The coal-producing area of the state is part of the

Eastern Interior Coal Field which extends into Illinois and Kentucky and covers approximately 7,500 square miles in 22 counties in the southwestern part of Indiana, 18 of which reported production in 1919.

The limestone industry was second in importance in value of products in Indiana, and the state, with an output valued at \$4,619,801, ranked third in the United States in 1919 as a producer of limestone. The state owes its rank in this industry to the importance of the limestone enterprises in the Bedford-Bloomington district in Lawrence and Monroe Counties.

The petroleum and natural-gas industry was third in importance, with an output valued at \$2,604,395. The industry is located in two fields: The Lima-Indiana Field in east central Indiana, which extends into Ohio; and the southwestern Indiana field, which is continuous with the Illinois field. In the former field 22 counties in Indiana reported production in 1919, and in the latter field 7 counties.

The corporation is the prevailing form of organization among mining enterprises in Indiana. Table 3 shows that corporations constituted 62.8 per cent of all the enterprises, employed 96.7 per cent of the wage earners, and reported 95.6 per cent of the value of products. In the bituminous coal industry more than two-thirds of the enterprises were corporations and these reported more than 97 per cent of both wage earners and value of products. In the limestone and petroleum and natural-gas industries more than one-half the enterprises were of the corporate form and these reported more than nine-tenths of both value of products and number of wage earners in the limestone industry and more than two-thirds of both in the petroleum and natural-gas industry.

The relatively large number of small mining enterprises is brought out by Table 4. Of the 503 producing mining enterprises in the state 413, or 82 per cent of the total number, were in classes reporting no wage earners or fewer than 101, and the wage earners employed by these enterprises were only 26.1 per cent of the total number employed. The 90 enterprises employing more than 100 wage earners, though only 17.9 per cent of the total number, reported 73.8 per cent of all wage earners reported. The enterprises reporting more than 100 wage earners were all in the coal, limestone, and petroleum and natural-gas industries and formed only 28.4 per cent, 7.5 per cent, and 0.8 per cent, respectively, of the enterprises in these industries.

Table 5 shows that, for all the mining industries considered together, the prevailing hours of labor were 44 to 53 per week in a majority of the enterprises and

for more than 80 per cent of the wage earners. These proportions are also true in the coal industry, but for the limestone industry, 54 to 62 hours were reported for 78.8 per cent of the enterprises and for 62.1 per cent of the wage earners in the industry. In the petroleum and natural-gas industry the largest group of enterprises, 31.9 per cent, was also the class reporting 54 to 62 as the prevailing hours per week and this class reported more than half of the wage earners in the petroleum and natural-gas industry.

The statistics for wage earners given in Table 6, showing changes in the number employed from month to month, reflect conditions prevailing in the industries during the census year. The unusually low minimum in the coal industry, which affects the figures for all industries combined, is abnormal as to season and is due to the strike of November, 1919.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	503	1,010	-50.2	Capital.....	\$63,198,281	\$50,764,947	5.7
Number of mines and quarries.....	398	430	-17.1	Principal expenses:			
Number of petroleum and natural-gas wells.....	2,456	10,373	-76.3	Salaries.....	4,078,279	1,101,521	270.2
Persons engaged.....	28,738	27,669	3.9	Wages.....	30,192,924	14,782,458	104.2
Proprietors and firm members, total.....	339	2,628	-87.1	Contract work.....	340,187	295,982	14.9
Number performing manual labor in or about the mines, quarries, and wells.....	164	181	-9.4	Supplies and materials <sup>2</sup> .....	6,421,099	1,846,499	247.7
Salaried employees.....	1,648	1,105	49.1	Fuel and power.....	2,012,706	651,521	264.7
Wage earners (average number).....	26,751	23,936	11.8	Royalties and rents.....	938,696	595,274	57.9
Power used (horsepower).....	129,663	95,039	36.4	Taxes.....	1,590,853	176,369	802.0
				Value of products.....	52,840,252	21,984,201	140.9

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes cost of natural gas purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	503	26,751	100.0	\$52,840,252	100.0	Limestone.....	67	1,800	6.7	\$4,619,801	8.7
Coal, bituminous.....	295	24,479	91.5	45,492,726	86.1	Petroleum and natural gas.....	131	403	1.5	2,604,395	4.9
						All other industries <sup>1</sup> .....	10	69	0.3	123,330	0.2

<sup>1</sup> Includes enterprises in industries as follows: Clay, 9; sandstone, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	503	26,751	\$52,840,252	\$106,050	100.0	100.0	100.0
Corporation.....	316	25,869	50,531,018	159,908	62.8	96.7	95.6
Individual.....	100	395	758,594	7,536	19.9	1.5	1.4
Firm.....	80	442	982,785	12,285	15.9	1.7	1.9
Other.....	7	45	572,855	81,836	1.4	0.2	1.1
COAL, BITUMINOUS.....	295	24,479	45,492,726	154,213	100.0	100.0	100.0
Corporation.....	202	23,528	44,226,927	218,945	68.5	97.3	97.2
Individual.....	46	284	488,796	10,626	15.6	1.2	1.1
Firm <sup>1</sup> .....	47	367	777,003	16,532	15.9	1.5	1.7
LIMESTONE.....	67	1,800	4,619,801	68,952	100.0	100.0	100.0
Corporation.....	35	1,644	4,347,674	124,219	52.2	91.3	94.1
Individual.....	21	83	142,106	6,787	31.3	4.6	3.1
Firm.....	11	73	130,021	11,820	16.4	4.1	2.8
PETROLEUM AND NATURAL GAS.....	131	403	2,604,395	19,831	100.0	100.0	100.0
Corporation.....	71	334	1,841,627	25,938	54.2	82.9	70.7
Individual.....	31	22	114,152	3,682	23.7	5.5	4.4
Firm.....	23	19	192,973	8,390	17.6	4.7	7.4
Other.....	6	28	455,643	75,940	4.6	6.9	17.8

<sup>1</sup> Includes 1 other form of organization.

## MINES AND QUARRIES—INDIANA.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES.....</b>	<b>503</b>	<b>100.0</b>	<b>26,751</b>	<b>100.0</b>	<b>LIMESTONE.....</b>	<b>67</b>	<b>100.0</b>	<b>1,800</b>	<b>100.0</b>
No wage earners.....	67	13.3			No wage earners.....	1	1.5		
1 to 5.....	159	31.6	410	1.5	1 to 5.....	24	35.8	56	3.1
6 to 20.....	80	15.9	884	3.3	6 to 20.....	24	35.8	240	13.3
21 to 50.....	56	11.1	1,878	7.0	21 to 50.....	9	13.4	260	14.4
51 to 100.....	51	10.1	3,828	14.3	51 to 100.....	4	6.0	252	14.0
101 to 500.....	86	17.1	16,462	61.5	101 to 500.....	5	7.5	992	55.1
501 to 1,000.....	3	0.6	1,816	6.8					
Over 1,000.....	1	0.2	1,473	5.5					
<b>COAL, BITUMINOUS.....</b>	<b>295</b>	<b>100.0</b>	<b>24,479</b>	<b>100.0</b>	<b>PETROLEUM AND NATURAL GAS..</b>	<b>131</b>	<b>100.0</b>	<b>403</b>	<b>100.0</b>
No wage earners.....	7	2.4			No wage earners.....	59	45.0		
1 to 5.....	66	22.4	212	0.9	1 to 5.....	61	46.6	115	28.5
6 to 20.....	49	16.6	576	2.4	6 to 20.....	6	4.6	62	15.4
21 to 50.....	42	14.2	1,459	6.0	21 to 50.....	4	3.1	123	30.5
51 to 100.....	47	15.9	3,576	14.6	101 to 500.....	1	0.8	103	26.6
101 to 500.....	80	27.1	16,867	62.8					
501 to 1,000.....	3	1.0	1,516	7.4					
Over 1,000.....	1	0.3	1,473	6.0					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 94.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
<b>All industries.....</b>	<b>1,436</b>	<b>26,751</b>	<b>43</b>	<b>3,261</b>	<b>20</b>	<b>339</b>	<b>269</b>	<b>21,667</b>	<b>83</b>	<b>1,376</b>	<b>13</b>	<b>53</b>	<b>8</b>	<b>55</b>
Coal, bituminous.....	288	24,479	37	3,253	15	330	234	20,890	2	6				
Limestone.....	66	1,800					14	682	52	1,118				
Petroleum and natural gas.....	72	403	6	8	5	9	18	53	23	229	12	49	8	55
All other industries.....	10	69					3	42	6	23	1	4		

<sup>1</sup> Exclusive of 67 enterprises employing no wage earners in industries as follows: Coal, bituminous, 7; limestone, 1; petroleum and natural gas, 59.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OF NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries.....</b>	<b>26,751</b>	<b>29,961</b>	<b>28,209</b>	<b>26,939</b>	<b>25,837</b>	<b>27,074</b>	<b>26,875</b>	<b>28,145</b>	<b>29,434</b>	<b>30,907</b>	<b>31,544</b>	<b>5,818</b>	<b>30,269</b>	<b>18.4</b>
Coal, bituminous.....	24,479	<b>28,559</b>	26,813	25,399	23,831	24,808	24,355	25,403	26,518	28,051	28,871	3,360	27,790	11.6
Limestone.....	1,800	940	<i>815</i>	1,107	1,583	1,817	2,046	2,249	2,419	2,363	2,170	1,989	2,002	37.8
Petroleum and natural gas.....	403	401	431	392	370	387	394	415	408	405	412	408	413	85.8
All other industries.....	69	61	50	51	53	62	80	78	89	88	91	61	64	54.9

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TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.				
	Total.	Coal, bituminous.	Limestone.	Petroleum and natural gas.	All other. <sup>1</sup>
Number of enterprises.....	508	295	67	131	10
Number of mines and quarries.....	398	317	71	.....	10
Number of petroleum and natural-gas wells.....	2,456	.....	.....	2,456	.....
Capital.....	\$63,198,281	\$45,996,383	\$7,156,592	\$9,890,964	\$154,342
Principal expenses:					
Salaries and wages—					
Officers.....	\$1,792,076	\$1,571,266	\$177,281	\$42,015	\$1,524
Superintendents.....	\$1,255,650	\$996,344	\$174,440	\$79,060	\$5,806
Technical employees.....	\$168,327	\$136,923	\$28,025	\$6,828	\$1,751
Clerks, etc.....	\$862,026	\$685,116	\$142,052	\$34,790	\$68
Wage earners.....	\$30,192,024	\$27,877,669	\$1,767,636	\$475,788	\$71,831
Supplies and materials.....	\$6,370,553	\$5,379,400	\$700,469	\$271,975	\$18,709
Cost of natural gas purchased as material and resold.....	\$50,646	.....	.....	\$50,646	.....
Fuel.....	\$1,737,090	\$1,455,123	\$214,987	\$61,206	\$5,684
Power.....	\$275,616	\$159,146	\$112,222	\$4,248	.....
Royalties and rents.....	\$939,696	\$562,265	\$31,974	\$344,064	\$1,368
Taxes.....	\$1,590,853	\$1,467,558	\$66,274	\$36,599	\$422
Contract work.....	\$340,187	\$103,826	\$7,473	\$218,536	\$15,363
Expenditures for development (included in the above items).....	\$2,111,492	\$1,534,258	\$127,979	\$449,255	.....
Value of products.....	\$52,840,252	\$45,492,726	\$4,619,801	\$2,604,366	\$123,330
Persons engaged in industry.....	28,738	25,911	2,106	644	77
Proprietors and firm members (total).....	339	170	44	123	2
Number performing manual labor.....	164	116	22	26	1
Salaried officers.....	371	298	44	28	1
Superintendents and officers.....	635	421	65	45	4
Technical employees.....	93	79	10	3	1
Clerks, etc.....	649	464	143	42	.....
Wage earners (average number).....	26,751	24,479	1,800	403	69
Wage earners, by occupation (Dec. 15):					
Above ground (total).....	16,634	13,943	2,481	422	88
Below ground (total).....	26,623	25,617	.....	.....	6
Foreman, shift bosses, etc.—					
Above ground.....	338	249	83	.....	6
Below ground.....	474	473	.....	.....	1
Enginemen, hoistmen, electricians, mechanics, etc.—					
Above ground.....	2,051	1,406	340	294	11
Below ground.....	881	881	.....	.....	.....
Miners, quarrymen, and drillmen, including their helpers—					
Above ground.....	962	193	708	.....	66
Below ground.....	14,191	14,189	.....	.....	2
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—					
Above ground.....	596	533	52	.....	1
Below ground.....	5,584	5,581	.....	.....	3
Muckers, loaders, laborers, and others not classified—					
Above ground.....	2,363	1,552	681	128	3
Below ground.....	4,493	4,493	.....	.....	.....
Wage earners employed in mills and beneficiating plants—					
Above ground.....	634	10	622	.....	2
Number of females included in wage earners reported above—					
Above ground.....	4	3	1	.....	.....
Mineral and oil land operated..... acres	266,988	176,200	4,826	85,319	644
Land controlled, total..... acres	280,513	189,594	4,831	85,319	769
Mineral and oil land owned.....	119,263	106,763	4,128	8,104	268
Mineral and oil land leased.....	151,036	72,748	607	77,215	376
Timber and other lands owned and leased.....	10,214	10,063	6	.....	125
Power used: Aggregate horsepower.....	129,668	99,585	21,642	7,669	767
Prime movers (horsepower, total).....	100,632	81,158	11,161	7,546	767
Steam engines—					
Number.....	898	673	142	65	13
Horsepower.....	92,120	78,912	10,836	1,606	767
Steam turbines—					
Number.....	16	15	1	.....	.....
Horsepower.....	2,062	1,902	150	.....	.....
Internal-combustion engines—					
Number.....	349	64	11	274	.....
Horsepower.....	6,460	344	175	5,941	.....
Purchased power (horsepower, total).....	29,031	18,427	10,481	123	.....
Electric motors operated by purchased current—					
Number.....	785	407	359	19	.....
Horsepower.....	29,031	18,427	10,481	123	.....
Electric motors run by current generated by enterprise using:					
Number.....	875	817	58	.....	.....
Horsepower.....	43,102	41,890	1,212	.....	.....
Fuel used: <sup>2</sup>					
Coal, anthracite..... tons, 2,240 pounds.....	1,366	.....	1,366	.....	.....
Coal, bituminous..... tons, 2,000 pounds.....	780,153	705,031	64,798	7,799	2,826
Fuel oils..... barrels.....	678	.....	.....	678	.....
Gasoline and other volatile oils..... barrels.....	1,529	1,087	342	150	.....
Natural gas..... 1,000 cubic feet.....	329,788	.....	.....	329,788	.....

<sup>1</sup> Includes enterprises as follows: Clay, 9; sandstone, 1.  
<sup>2</sup> Includes 2 wage earners under 16 years of age reported by 1 enterprise.  
<sup>3</sup> Exclusive of 10 tons of coke in the limestone industry.

# IOWA.

Iowa, which ranks twenty-fourth in size among the states (land area, 55,586 square miles) and sixteenth in population (2,404,021 in 1920), ranked twenty-fifth in value of mineral products for 1919. The state ranked twentieth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total value of mineral products for the state in 1919 was \$18,473,558, an increase of 33.1 per cent over the value reported at the census of 1909. This increase and the increases in the principal expenses of operation, shown in Table 1, are due to price increases and are not significant of increase in mining in Iowa during the decade. Decreases in the number of enterprises, individual mines and quarries operated, and wage earners employed reflect adverse conditions in 1919. The addition of Federal income taxes since 1909 will account for the large increase in taxes.

The industries reported for 1919, ranked according to value of products, were coal mining, gypsum mining, limestone quarrying, and clay mining. The industries for which the statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The principal mining industry, coal, reported products valued at \$16,903,358, which includes, in addition to the value of the coal produced, a small amount received by the operators for power sold and miscellaneous services furnished other enterprises. Iowa ranked eleventh among the states in the value of coal produced in 1919. The coal-producing area of the state is part of the Western Interior Coal Field and extends over 20 central and southern counties.

Gypsum production ranked second in importance in the state and Iowa ranked second among the gypsum-producing states with an output valued at \$1,092,920, reported almost entirely from Webster County.

The superior position of corporations among the organizations operating mining enterprises is brought

out in Table 3. More than half of the enterprises in the mining industries were conducted by corporations, which employed 92 per cent of the total number of wage earners and reported 92.3 per cent of the total value of products.

The relatively large number of small enterprises, as measured by the number of wage earners employed, is shown in Table 4. Eighty and eight-tenths per cent of the total number of enterprises were in classes having no wage earners or fewer than 101, while such enterprises employed only 27.6 per cent of the total number of wage earners. On the other hand, enterprises employing more than 100 wage earners constituted 19.2 per cent of the total number of enterprises but employed 72.4 per cent of the total number of wage earners. These larger enterprises were in the coal and gypsum industries.

Table 5 shows that, for 82 per cent of all mining enterprises employing wage earners and 97 per cent of the total number of wage earners engaged in the mining industries, the prevailing hours of labor were 44 to 53 per week. In the gypsum industry all enterprises and in the coal industry nearly all enterprises reported these hours; in the limestone industry 19 out of 24 enterprises, employing 85.4 per cent of the wage earners in the industry, reported 54 to 62 hours of labor per week.

The statistics for wage earners given in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The extremely low minimum in the coal industry in November, which affects the figures for all industries combined, was due to the great strike and was very abnormal as to number of wage earners and as to occurrence of minimum employment in this industry late instead of early in the year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of in- crease. <sup>1</sup>		MINING INDUSTRIES.		Per cent of in- crease. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	198	373	-46.9	Principal expenses:			
Number of mines and quarries.....	230	431	-46.6	Salaries.....	\$1,343,697	\$540,975	143.4
Persons engaged.....	12,034	17,374	-30.7	Wages.....	12,466,426	10,870,446	14.7
Proprietors and firm members, total.....	200	423	-52.7	Contract work.....	33,464	40,536	-18.1
Number performing manual labor in or about the mines and quarries.....	143	285	-49.8	Supplies and materials.....	2,072,308	1,307,919	58.4
Salaried employees.....	530	471	13.9	Fuel and power.....	745,844	221,740	237.7
Wage earners (average number).....	11,274	16,480	-31.6	Royalties and rents.....	335,530	349,440	-4.0
Power used (horsepower).....	32,171	23,458	37.2	Taxes.....	186,811	43,574	323.7
Capital.....	\$16,699,094	\$8,481,483	96.9	Value of products.....	18,473,558	13,877,781	33.1

<sup>1</sup>A minus sign (-) denotes decrease.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	198	11,274	100.0	\$18,473,558	100.0	Gypsum.....	5	444	3.9	\$1,092,920	5.9
Coal, bituminous.....	167	10,584	93.9	16,903,358	91.5	Limestone <sup>1</sup> .....	26	246	2.2	477,280	2.6

<sup>1</sup> Includes, to avoid disclosure, 1 small clay enterprise.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	198	11,274	\$18,473,558	\$98,301	100.0	100.0	100.0
Corporation.....	102	10,370	17,052,298	167,179	51.5	92.0	92.3
Individual.....	35	431	585,293	16,723	17.7	3.8	3.2
Firm <sup>1</sup> .....	61	473	836,967	13,704	30.8	4.2	4.5
COAL, BITUMINOUS.....	167	10,584	16,903,358	101,218	100.0	100.0	100.0
Corporation.....	84	9,746	15,610,232	185,836	50.3	92.1	92.3
Individual.....	27	394	504,025	18,665	16.2	3.7	3.0
Firm <sup>1</sup> .....	56	444	789,101	14,091	33.5	4.2	4.7
GYPSUM.....	5	444	1,092,920	218,584	100.0	100.0	100.0
Corporation.....	5	444	1,092,920	218,584	100.0	100.0	100.0
LIMESTONE <sup>2</sup> .....	26	246	477,280	18,357	100.0	100.0	100.0
Corporation.....	13	180	349,146	26,857	50.0	73.2	73.2
Individual.....	8	37	81,268	10,158	30.8	15.0	17.0
Firm.....	5	29	46,866	9,373	19.2	11.8	9.8

<sup>1</sup> Includes 1 other form of organization.

<sup>2</sup> Includes 1 small clay enterprise.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	198	100.0	11,274	100.0	GYPSUM.....	5	100.0	444	100.0
No wage earners.....	4	2.0	.....	.....	6 to 20.....	1	20.0	9	2.0
1 to 5.....	61	30.8	177	1.6	21 to 50.....	2	40.0	78	17.6
6 to 20.....	50	25.3	576	5.1	101 to 500.....	2	40.0	357	80.4
21 to 50.....	21	10.6	648	5.7	LIMESTONE <sup>1</sup> .....	26	100.0	246	100.0
51 to 100.....	24	12.1	1,716	15.2	No wage earners.....	2	7.7	.....	.....
101 to 500.....	36	18.2	6,659	59.1	1 to 5.....	9	34.6	20	8.1
501 to 1,000.....	2	1.0	1,498	13.3	6 to 20.....	13	50.0	137	55.7
COAL, BITUMINOUS.....	167	100.0	10,584	100.0	21 to 50.....	1	3.8	31	12.6
No wage earners.....	2	1.2	.....	.....	51 to 100.....	1	3.8	58	23.6
1 to 5.....	52	31.1	157	1.5					
6 to 20.....	36	21.6	430	4.1					
21 to 50.....	18	10.8	539	5.1					
51 to 100.....	23	13.8	1,653	15.7					
101 to 500.....	34	20.4	6,302	59.5					
501 to 1,000.....	2	1.2	1,498	14.2					

<sup>1</sup> Includes 1 small clay enterprise employing no wage earners.



## MINES AND QUARRIES—IOWA.

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	194	11,274	2	11	14	117	159	10,986	19	210
Coal, bituminous.....	165	10,584	2	11	14	117	149	10,456	.....	.....
Gypsum.....	5	444	.....	.....	.....	.....	5	444	.....	.....
Limestone.....	24	246	.....	.....	.....	.....	5	36	19	210

<sup>1</sup> Exclusive of 4 enterprises employing no wage earners in industries as follows: Clay, 1; coal, bituminous, 2; limestone, 1.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	11,274	<b>12,221</b>	12,926	12,502	11,194	10,868	10,622	11,012	11,811	12,524	13,062	<i>8,404</i>	12,062	25.7
Coal, bituminous.....	10,584	<b>12,879</b>	12,554	12,154	10,634	10,192	9,886	10,172	10,930	11,570	12,100	<i>8,527</i>	11,410	19.6
Gypsum.....	444	<b>253</b>	240	272	330	389	453	540	545	611	619	<i>613</i>	453	37.6
Limestone.....	246	<b>109</b>	132	166	230	287	283	300	336	343	333	<i>264</i>	169	31.8

MINES AND QUARRIES—IOWA.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.			
	Total.	Coal, bituminous.	Gypsum.	Limestone. <sup>1</sup>
Number of enterprises.....	198	167	5	26
Number of mines and quarries.....	230	199	5	26
Capital.....	\$16,699,094	\$13,628,806	\$2,124,006	\$946,283
Principal expenses:				
Salaries and wages—				
Officers.....	\$536,196	\$520,082	\$6,849	\$9,265
Superintendents and managers.....	\$503,001	\$458,074	\$36,838	\$18,689
Technical employees.....	\$24,806	\$23,306		\$1,500
Clerks, etc.....	\$279,096	\$201,406	\$51,780	\$26,910
Wage earners.....	\$12,466,426	\$11,687,918	\$496,747	\$28,761
Supplies and materials.....	\$2,072,408	\$1,758,026	\$306,180	\$108,103
Fuel.....	\$902,285	\$449,677	\$119,579	\$37,009
Power.....	\$142,659	\$120,666	\$13,021	\$8,872
Royalties and rents.....	\$335,430	\$399,194	\$21,021	\$15,315
Taxes.....	\$186,811	\$176,543	\$7,546	\$2,722
Contract work.....	\$33,464	\$33,464		
Expenditures for development (included in the above items).....	\$587,368	\$580,282	\$8,000	\$19,086
Value of products.....	\$18,473,568	\$16,903,358	\$1,092,920	\$477,290
Persons engaged in industry.....	12,034	11,239	487	308
Proprietors and firm members (total):	200	178		22
Number performing manual labor.....	143	136		7
Salaried officers.....	128	122	1	5
Superintendents and managers.....	185	173	9	13
Technical employees.....	13	12		1
Clerks, etc.....	224	170	33	21
Wage earners (average number).....	11,274	10,584	444	246
Wage earners by occupation (Dec. 15):				
Above ground (total).....	\$1,844	\$1,852	171	321
Below ground (total).....	11,300	10,945	355	
Foremen, shift bosses, etc.—				
Above ground.....	100	81	2	17
Below ground.....	181	169	12	
Enginemen, hoistmen, electricians, mechanics, etc.—				
Above ground.....	442	381	17	44
Below ground.....	98	97	1	
Miners, quarrymen, and drillmen, including their helpers—				
Above ground.....	179	31		148
Below ground.....	7,284	7,175	109	
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—				
Above ground.....	255	240	5	10
Below ground.....	2,885	2,799	86	
Muckers, loaders, laborers, and others not classified—				
Above ground.....	742	619	21	102
Below ground.....	852	705	147	
Wage earners employed in mills and beneficiating plants—				
Above ground.....	126		126	
Mineral land operated..... acres	68,724	66,359	1,519	846
Land controlled, total..... acres	73,672	71,117	1,519	1,036
Mineral land owned.....	33,536	31,662	1,160	714
Mineral land leased.....	36,433	35,942	359	132
Timber and other lands owned and leased.....	3,703	3,513		190
Power used: Aggregate horsepower.....	32,171	26,123	2,057	3,991
Prime movers (horsepower, total).....	19,626	15,885	1,256	2,485
Steam engines—				
Number.....	256	214	4	38
Horsepower.....	17,078	13,389	1,256	2,433
Steam turbines—				
Number.....	4	4		
Horsepower.....	1,690	1,690		
Internal-combustion engines—				
Number.....	94	85		9
Horsepower.....	858	806		52
Purchased power (horsepower, total).....	12,545	10,238	801	1,506
Electric motors operated by purchased current—				
Number.....	358	288	40	30
Horsepower.....	12,540	10,233	801	1,506
Other equipment operated by purchased power—				
Horsepower.....	5	5		
Electric motors run by current generated by enterprise using:				
Number.....	88	67	21	
Horsepower.....	4,670	4,119	551	
Fuel used:				
Coal, bituminous..... tons, 2,000 pounds	210,939	184,205	18,380	8,374
Coke..... tons, 2,000 pounds	465		465	
Wood..... cords	115			115
Fuel oils..... barrels	42	42		
Gasoline and other volatile oils..... barrels	1,675	1,180		496

<sup>1</sup> Includes, to avoid disclosure, 1 small clay enterprise.

<sup>2</sup> Includes 1 female.

## KANSAS.

Kansas, which ranks thirteenth among the states in size (land area 81,774 square miles) and twenty-fourth in population (1,769,257 in 1920), ranked eleventh in value of mineral products for 1919. The state ranked twelfth in the total number of persons engaged in the mining industries and fourteenth in the average number of wage earners employed.

The total amount received by operators of all mines, quarries, and wells in Kansas in 1919 was \$90,338,204, an increase of 382.5 per cent compared with the corresponding amount reported at the census of 1909. The value of products reported for 1919 includes duplications to the amount of \$298,353, the value of natural gas purchased by some producers from others and used as material or resold, and the value of lead and zinc ore sold by some operators and again included in the value of products by others who concentrated the ore. Deducting this amount leaves \$90,039,851, the net value of products for 1919, which was an increase of 391.2 per cent over the net value for 1909. The value of products reported for 1919 includes, in addition to the value of the minerals produced, a small amount received for power sold and for work or miscellaneous services for other enterprises. The increase in value of products, also increases in capital, wages, cost of supplies and materials and fuel and power, as shown in Table 1, are largely due to general price increases during the census interval, but, nevertheless, show growth in the mining industries. Progress is also indicated by the increase in the number of producing enterprises and wells operated and average number of wage earners. The decrease in the number of individual mines and quarries operated and the increase in the number of wells show that the general growth of mineral industries in Kansas was due to expansion of the petroleum and natural-gas industry, which offset decreases in other industries.

The mining industries reported in Kansas in 1919, classified according to principal products and listed in order of value of products, were petroleum and natural gas, bituminous coal, lead and zinc, limestone, gypsum, abrasive materials (pumice), and clay. One of the most important mining industries in Kansas was the production of salt. The statistics for this industry are included in the census of manufactures. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mineral industry in Kansas was the production of petroleum and natural gas. The statistics presented for this industry include figures on operation of plants engaged in the extraction of

gasoline from natural gas, whether such plants were connected with well operations or not. Out of a total of 814 enterprises, 613 were reported in the petroleum and natural-gas industry. These enterprises employed 39.1 per cent of the total number of wage earners and contributed products valued at \$68,515,158, or 75.8 per cent of the total. Kansas ranked fifth in petroleum and natural-gas output in 1919. Production was obtained from some 50 pools or local fields distributed over about 5,000 square miles of territory in 27 southeastern counties. This region is part of the Mid-Continent Oil Field which extends from Kansas through Oklahoma into northern Texas and Louisiana.

The industry second in importance in Kansas in 1919, on the basis of value of products but first as measured by average number of wage earners, was the mining of bituminous coal. This industry, comprising about one-sixth of all mining enterprises in the state, employed 50.1 per cent of the total number of wage earners and reported products valued at \$15,748,535, or 17.4 per cent of the total value of products for the state. Production of coal was reported from six eastern and southeastern counties of which Cherokee and Crawford were the most important.

The mining of lead and zinc was third in importance in the state. It was confined to Cherokee County, the output of which placed Kansas fifth among the states as a producer of lead and zinc ores. The 30 enterprises in this industry employed 7.1 per cent of the total number of wage earners and reported products valued at \$4,872,968, or 5.4 per cent of the total value for the state.

In addition to the operations of productive mines, quarries, and wells, work done for the purpose of development of nonproducing property was reported by 10 enterprises in the petroleum and natural-gas industry, 2 in lead and zinc mining, and 1 in coal mining. Such activities amounted to only a very small part of the aggregate mining operations in the state.

Mining enterprises in Kansas in 1919 are classified in Table 3 according to character of the operating organization. This table shows that for all industries combined corporations were in the majority. They controlled 53.1 per cent of the number of enterprises, employed 87.5 per cent of the wage earners, and reported 89.5 per cent of the total value of products. In the three leading industries a similar preponderance of corporations over other forms of organization is shown.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of

mining enterprises in Kansas, 16.3 per cent had no wage earners and 80 per cent reported fewer than 101 wage earners each and these employed 37.5 per cent of the total number of wage earners. On the other hand, only 3.6 per cent of the total number of enterprises had more than 100 wage earners each and these enterprises employed 62.5 per cent of the total number of wage earners. The larger enterprises were in the coal and petroleum and natural-gas industries, except that one was reported in the lead and zinc industry and one in the limestone industry.

In Table 5 the mining enterprises are classified according to prevailing hours of labor. The largest group of enterprises is shown in the class where the hours of labor were 44 to 53 per week. This class employed 57.5 per cent of the total number of wage earners. A considerable number of enterprises were in the class for which the hours of labor were 54 to 62 per week. Practically all the enterprises and wage

earners in the coal-mining industry and a large majority of the enterprises and wage earners in the lead and zinc mining industry were in the class working 44 to 53 hours per week. The 8-hour day and 6-day week prevailed in both industries, but a 7-day week in the lead and zinc industry was reported by several important enterprises. In the petroleum and natural-gas industry longer hours were the rule.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The extreme minimum for the coal industry shown in the month of November is due to the great strike, and the extent of unemployment in that industry was so great as to be reflected in the figures for all industries combined.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>2</sup>
	1919	1909			1919	1909	
Number of enterprises.....	514	643	26.6	Capital.....	\$255,935,807	\$41,797,320	512.3
Number of mines and quarries.....	238	582	-59.1	Principal expenses:			
Number of petroleum and natural-gas wells.....	12,690	3,402	273.0	Salaries.....	3,299,804	688,432	379.3
Number of natural-gas gasoline plants.....	11			Wages.....	21,948,799	9,636,350	127.8
Persons engaged.....	18,689	16,108	16.1	Contract work.....	3,997,644	396,947	999.6
Proprietors and firm members, total.....	807	1,074	-24.9	Supplies and materials <sup>3</sup> .....	33,395,983	2,038,025	1,538.6
Number performing manual labor in or about the mines, quarries, and wells.....	123	575	-78.6	Fuel and power.....	4,305,575	267,964	1,596.8
Salaried employees.....	1,746	686	154.5	Royalties and rents.....	10,712,223	1,665,839	543.1
Wage earners (average number).....	16,136	14,343	12.5	Taxes.....	2,273,748	147,570	1,440.8
Power used (horsepower).....	133,984	66,943	100.1	Value of products.....	90,338,204	18,722,634	382.5

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes cost of ore and natural gas purchased as material or for resale.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	814	16,136	100.0	\$90,338,204	100.0	Lead and zinc.....	30	1,141	7.1	\$4,872,968	5.4
Petroleum and natural gas.....	613	6,305	39.1	68,515,168	75.8	Limestone.....	35	484	3.0	835,147	0.9
Coal, bituminous.....	129	8,064	50.1	15,748,535	17.4	All other industries <sup>1</sup> .....	7	122	0.8	366,266	0.4

<sup>1</sup> Includes enterprises in industries as follows: Abrasive materials, 3; clay, 1; gypsum, 3.

MINES AND QUARRIES—KANSAS.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
<b>ALL INDUSTRIES</b> .....	814	16,136	\$90,338,204	\$110,981	100.0	100.0	100.0
Corporation.....	432	14,127	80,814,942	187,072	53.1	87.5	89.5
Individual.....	143	922	3,128,553	21,878	17.6	5.7	3.5
Firm.....	212	915	5,585,558	26,247	26.0	5.7	6.2
Other.....	27	172	809,151	29,999	3.3	1.1	0.9
<b>PETROLEUM AND NATURAL GAS</b> .....	613	6,305	68,515,188	111,770	100.0	100.0	100.0
Corporation.....	334	5,736	61,600,996	194,434	54.5	91.0	89.9
Individual.....	91	160	1,669,900	18,351	14.8	2.5	2.4
Firm.....	165	348	4,568,914	27,690	26.9	5.5	6.7
Other.....	23	61	678,248	29,363	3.8	1.0	1.0
<b>COAL, BITUMINOUS</b> .....	129	8,084	15,748,535	122,032	100.0	100.0	100.0
Corporation.....	63	6,925	13,643,227	216,561	48.8	85.7	86.6
Individual.....	30	652	1,250,429	41,681	23.3	8.1	7.9
Firm.....	32	396	720,976	22,531	24.8	4.9	4.6
Other.....	4	111	183,803	33,451	3.1	1.4	0.8
<b>LEAD AND ZINC</b> .....	30	1,141	4,872,968	162,432	100.0	100.0	100.0
Corporation.....	25	1,111	4,841,010	193,640	83.3	97.4	99.2
Firm.....	5	30	31,958	6,792	16.7	2.6	0.7
<b>LIMESTONE</b> .....	35	484	835,147	23,861	100.0	100.0	100.0
Corporation.....	5	240	412,742	82,548	14.3	49.6	49.4
Individual.....	18	97	157,470	8,748	51.4	29.0	18.9
Firm.....	12	147	264,935	22,078	34.3	30.4	31.7

<sup>1</sup> Includes 2 individuals.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	814	100.0	16,136	100.0	<b>PETROLEUM AND NATURAL GAS</b> .....	613	100.0	6,305	100.0
No wage earners.....	133	16.3	.....	.....	No wage earners.....	132	21.5	.....	.....
1 to 5.....	424	52.1	738	4.6	1 to 5.....	381	62.2	624	9.9
6 to 20.....	144	17.7	1,556	9.6	6 to 20.....	75	12.2	816	12.9
21 to 50.....	57	7.0	1,874	11.6	21 to 50.....	15	2.4	485	7.7
51 to 100.....	26	3.2	1,885	11.7	51 to 100.....	3	0.5	194	3.1
101 to 500.....	26	3.2	4,719	29.2	101 to 500.....	6	1.0	1,382	20.5
501 to 1,000.....	2	0.2	1,317	8.2	Over 1,000.....	1	0.2	2,594	45.9
Over 1,000.....	2	0.2	4,048	25.1	<b>LEAD AND ZINC</b> .....	30	100.0	1,141	100.0
<b>COAL, BITUMINOUS</b> .....	129	100.0	8,084	100.0	1 to 5.....	5	16.7	14	1.2
No wage earners.....	1	0.8	.....	.....	6 to 20.....	8	28.7	101	8.9
1 to 5.....	19	14.7	63	0.8	21 to 50.....	8	28.7	261	22.9
6 to 20.....	46	35.7	479	5.9	51 to 100.....	8	28.7	530	46.5
21 to 50.....	28	21.7	933	11.6	101 to 500.....	1	3.3	225	20.6
51 to 100.....	14	10.9	1,089	13.5	<b>LIMESTONE</b> .....	35	100.0	484	100.0
101 to 500.....	18	14.0	3,089	37.6	1 to 5.....	17	48.6	31	6.4
501 to 1,000.....	2	1.5	1,317	16.3	6 to 20.....	11	31.4	110	22.7
Over 1,000.....	1	0.8	1,154	14.3	21 to 50.....	6	17.1	190	39.3
					101 to 500.....	1	2.9	153	31.6

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TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	1 681	16, 136	56	88	26	60	317	9, 276	185	2, 508	47	680	50	3, 524
Coal, bituminous.....	128	8, 084	4	29	3	16	121	8, 039						
Petroleum and natural gas.....	431	6, 305	52	59	22	43	148	376	163	1, 624	47	690	49	3, 523
Lead and zinc.....	30	1, 141					25	718	4	422			1	1
Limestone.....	35	484			1	1	22	133	12	350				
All other industries.....	7	122					1	10	6	112				

<sup>1</sup> Exclusive of 133 enterprises employing no wage earners in industries as follows: Coal, bituminous, 1; petroleum and natural gas, 132.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	16, 193	17, 476	17, 282	17, 239	16, 871	17, 236	17, 049	17, 266	16, 479	16, 487	16, 490	8, 931	15, 510	51. 1
Producing enterprises.....	16, 136	17, 448	17, 262	17, 207	16, 851	17, 214	16, 982	17, 191	16, 397	16, 397	16, 415	8, 845	15, 425	50. 7
Coal, bituminous.....	8, 084	8, 728	9, 610	9, 583	9, 292	9, 216	9, 151	9, 136	7, 913	7, 818	7, 802	622	7, 237	5. 4
Petroleum and natural gas.....	6, 305	6, 347	6, 196	5, 987	5, 879	6, 159	6, 056	6, 323	6, 591	6, 656	6, 591	6, 452	6, 423	88. 3
Lead and zinc.....	1, 141	850	941	1, 080	1, 030	1, 122	1, 028	1, 122	1, 309	1, 277	1, 244	1, 264	1, 323	63. 2
Limestone.....	484	416	415	451	532	607	687	506	471	509	536	447	281	44. 1
All other industries.....	122	197	100	106	118	110	110	104	113	137	140	158	181	62. 1
Nonproducing enterprises.....	57	28	30	32	30	22	67	75	82	90	75	88	85	22. 2
Petroleum and natural gas.....	3	2	2	2	2	2	2	3	3	3	5	5	5	40. 0
All other industries.....	54	26	18	30	18	20	65	72	79	87	70	83	80	20. 7

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.						NONPRODUCING ENTERPRISES.		
		Total.	Petroleum and natural gas.	Coal, bituminous.	Lead <sup>1</sup> and zinc.	Lime-stones.	All other. <sup>2</sup>	Total.	Petroleum and natural gas.	All other. <sup>3</sup>
Number of enterprises.....	827	814	613	129	30	35	7	13	10	3
Number of mines and quarries.....	241	238	166	166	30	35	7	3		3
Number of petroleum and natural-gas wells.....	12,690	12,690	12,690							
Number of natural-gas gasoline plants.....	11	11	11							
Capital.....	\$257,222,997	\$255,935,807	\$237,711,466	\$12,285,452	\$4,465,307	\$768,585	\$704,997	\$1,287,190	\$245,028	\$1,042,162
Principal expenses:										
Salaries and wages—										
Officers.....	\$869,604	\$853,904	\$548,875	\$236,115	\$50,802	\$11,230	\$6,882	\$15,700		\$15,700
Superintendents and managers.....	\$1,010,234	\$1,001,606	\$596,598	\$284,369	\$90,246	\$20,799	\$9,594	\$8,628	\$2,328	\$6,300
Technical employees.....	\$283,224	\$280,374	\$247,736	\$23,346	\$7,792	\$1,500		\$2,850		\$2,850
Clerks, etc.....	\$1,171,255	\$1,164,010	\$805,539	\$280,698	\$32,069	\$31,263	\$14,441	\$7,245	\$1,625	\$5,620
Wage earners.....	\$22,021,656	\$21,945,799	\$9,615,375	\$9,049,156	\$1,780,200	\$500,783	\$123,285	\$72,867	\$8,783	\$64,074
Supplies and materials.....	\$33,234,583	\$33,097,630	\$30,046,473	\$1,006,063	\$977,212	\$128,655	\$39,227	\$136,953	\$28,208	\$108,745
Cost of ore purchased and natural gas purchased as material and resold.....	\$298,353	\$298,353	\$287,725		\$10,628					
Fuel.....	\$4,075,132	\$4,067,088	\$3,269,151	\$479,320	\$361,020	\$38,822	\$18,775	\$8,044	\$2,375	\$5,669
Power.....	\$273,333	\$238,487	\$61,983	\$55,520	\$107,797	\$8,284	\$4,908	\$34,846	\$503	\$34,343
Royalties and rents.....	\$10,738,945	\$10,712,223	\$9,547,568	\$409,674	\$697,874	\$20,034	\$37,073	\$26,722	\$2,376	\$24,346
Taxes.....	\$2,274,285	\$2,273,748	\$1,943,568	\$295,463	\$24,716	\$6,009	\$3,992	\$537	\$98	\$439
Contract work.....	\$4,063,020	\$3,997,644	\$3,887,822	\$6,363	\$68,092	\$19,130	\$16,247	\$65,376	\$64,940	\$436
Expenditures for development (included in the above items).....	\$23,722,380	\$23,448,955	\$23,127,585	\$96,748	\$221,372	\$3,260		\$273,425	\$104,472	\$168,953
Value of products.....	\$90,338,204	\$90,338,204	\$68,515,158	\$15,748,535	\$4,872,968	\$835,147	\$366,396			
Persons engaged in industry.....	18,777	18,689	8,131	8,622	1,234	563	139	88	20	68
Proprietors and firm members (total).....	823	807	639	111	10	45	2	16	14	2
Number performing manual labor.....	124	123	32	78	1	12		1	1	
Salaried officers.....	290	286	187	65	27	4	3	4		4
Superintendents and managers.....	416	412	259	113	27	9	4	4	2	2
Technical employees.....	152	151	126	20	4	1		1		1
Clerks, etc.....	903	897	615	229	25	20	8	6	1	5
Wage earners (average number).....	16,193	16,136	6,305	8,084	1,141	494	122	57	3	54
Wage earners by occupation (Dec. 15):										
Above ground (total).....	9,262	9,205	6,502	1,492	581	507	123	57	7	50
Below ground (total).....	8,706	8,677	7,761	7,761	866		50	29		29
Foremen, shift bosses, etc.—										
Above ground.....	140	138		106	20	10	2	2		2
Below ground.....	130	127		101	24		2	2		2
Enginemen, hoistmen, electricians, mechanics, etc.—										
Above ground.....	4,318	4,299	3,544	522	186	44	3	19	7	12
Below ground.....	82	78		72	3		3	4		4
Miners, quarrymen, and drillmen, including their helpers—										
Above ground.....	439	439		204		235				
Below ground.....	6,250	6,246		5,841	389		16	4		4
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—										
Above ground.....	172	164		115	12	35	2	8		8
Below ground.....	1,667	1,652		1,413	227		12	15		15
Muckers, loaders, laborers, and others not classified—										
Above ground.....	3,798	3,768	2,958	545	35	183	47	28		28
Below ground.....	577	574		334	223		17	3		3
Wage earners employed in mills and beneficiating plants—										
Above ground.....	397	397			328		69			
Mineral and oil land operated..... acres.....	574,290	549,300	468,144	73,559	1,686	1,208	4,708	24,990	2,975	22,015
Land controlled, total..... acres.....	590,003	564,411	468,144	88,650	1,686	1,228	4,703	25,592	2,975	23,617
Mineral and oil land owned.....	70,632	69,621	34,727	30,629		672	3,583	941	15	926
Mineral and oil land leased.....	505,280	490,629	433,417	43,880	1,686	536	1,110	24,651	2,960	21,691
Timber and other lands owned and leased.....	14,161	14,161		14,141		20				
Power used: Aggregate horsepower.....	136,531	133,984	95,983	23,434	11,496	2,252	919	1,547	151	1,396
Prime movers (horsepower, total).....	122,104	121,477	91,971	19,334	8,367	1,686	119	627	131	496
Steam engines—										
Number.....	910	908	482	353	45	20	3	7	2	5
Horsepower.....	37,159	36,605	13,346	18,978	3,135	1,046	100	554	58	496
Internal-combustion engines—										
Number.....	3,164	3,160	3,057	36	53	11	3	4	4	
Horsepower.....	84,380	84,287	78,625	356	4,647	640	19	73	73	
Water wheels and turbines—										
Number.....	7	7			7					
Horsepower.....	585	585			585					
Purchased power (horsepower, total).....	13,427	12,507	3,912	4,100	3,129	566	800	920	20	900
Electric motors operated by purchased current—										
Number.....	516	499	163	233	56	12	35	17	1	16
Horsepower.....	13,327	12,507	3,912	4,100	3,129	566	800	920	20	900
Other equipment operated by purchased power—										
Horsepower.....	100							100		100
Electric motors run by current generated by enterprise using:										
Number.....	310	308	249	37		15	7	2		3
Horsepower.....	8,896	8,886	7,440	1,041		380	45	10		10
Fuel used:										
Coal, bituminous..... tons, 2,000 pounds.....	213,528	212,503	5,470	170,666	30,080	5,126	1,161	1,025	125	900
Wood..... cords.....	747	747		60	687					
Fuel oils..... barrels.....	695,021	694,541	672,021	2	12,133	3,275	7,110	490	490	
Gasoline and other volatile oils..... barrels.....	4,028	3,972	2,269	360		320	23	56	56	
Natural gas..... 1,000 cubic feet.....	8,098,022	8,088,328	7,796,509		318,819			9,694	2,000	7,694

<sup>1</sup> Includes 2 reduction mills operated independently of mines, and 1 operation on dumps or old tailings.

<sup>2</sup> Includes enterprises as follows: Abrasive materials, 3; clay, 1; gypsum, 3.

<sup>3</sup> Includes enterprises as follows: Coal, bituminous, 1; lead and zinc, 2.

## KENTUCKY.

Kentucky, which ranks thirty-sixth among the states in size (land area, 40,181 square miles) and fifteenth in population (2,416,630 in 1920), ranked tenth in value of mineral products for 1919. The state ranked fifth in total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross value of products of all mines, quarries, and wells in Kentucky in 1919 amounted to \$98,486,910. This figure includes \$127,138, the amount received for mineral by-products, custom milling, power sold, and for work or miscellaneous services for other enterprises. It includes also a duplication of \$41,104, the value of natural gas sold by some producers to others who used it as material or resold it and included it in the products reported by them. The increase in value of products in 1919 was more than 700 per cent compared with the value of products reported at the census of 1909. This increase and the increases in capital, wages, cost of supplies and materials and fuel and power, as shown in Table 1, although due in large part to general price increases during the census interval, nevertheless show large growth in mining, which is also reflected by increases in number of enterprises, number of individual mines, quarries, and wells operated, and average number of wage earners employed.

The mining industries reported in Kentucky in 1919, classified according to principal products and listed in order of value of products, were bituminous coal, petroleum and natural gas, limestone, fluorspar, clay, asphalt, sandstone, phosphate rock, mineral pigments, and barytes. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The principal industry in Kentucky in 1919 was the mining of coal, which embraced 635 mining enterprises, or 67.7 per cent of the total number, employed 91.3 per cent of the total number of wage earners, and reported as value of products \$72,432,840, or 73.5 per cent of the total value of mineral products of the state. Kentucky ranked fifth in the United States in the production of bituminous coal. The coal-producing areas in the state extend over approximately 8,000 square miles in 22 eastern and southeastern counties, which are part of the Middle Appalachian coal fields, and approximately 5,000 square miles in 10 counties in the western part of the state, which are part of the Eastern Interior coal field. Approximately 75 per cent of the production in 1919 was from the eastern district in which Pike, Harlan, Letcher, Perry, Bell, and Floyd Counties were the most productive. Muhlenberg, Hopkins, and Webster Counties were the principal producers in the western district.

The industry second in importance was the production of petroleum and natural gas in which Kentucky ranked tenth in the United States. In this industry 196 enterprises, or approximately one-fifth of the total

number in the state, employed 4.9 per cent of the total number of wage earners and contributed products valued at \$23,329,521, or 23.7 per cent of the total. Production was reported from 32 counties in eastern, southern, and west central parts of the state.

Other mining industries in Kentucky were relatively small, but the Kentucky fluorspar, asphalt, and mineral pigments industries were important; the state ranked second among the states in the first two and third in the other.

A small amount of development work was done on mining properties which were unproductive in 1919. Eight petroleum enterprises and 3 coal-mining enterprises reported such work.

The mining enterprises in Kentucky in 1919 are classified according to form of operating organization in Table 3, which shows that corporations outclassed all other organizations in the number and size of enterprises operated. In all industries for the state as a whole and in the leading industries corporations employed practically all of the wage earners and contributed nearly the whole of the product, or a largely predominating share.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Kentucky, 89.1 per cent were in classes having no wage earners or fewer than 101. On the other hand, only 102 enterprises, or 10.9 per cent of the total number, had more than 100 wage earners each, and these enterprises employed 62.1 per cent of the total number of wage earners. The larger enterprises were in the coal-mining and petroleum and natural-gas industries and one in the asphalt industry.

Table 5 shows that in a majority of the enterprises employing wage earners and for 72.6 per cent of the total number of wage earners the hours of labor were 44 to 53 per week. These hours were reported chiefly by enterprises in the coal-mining industry for which the 8-hour day and 6-day week prevailed. Longer hours, for the most part 54 to 62, ruled in other industries. In the petroleum and natural-gas industry the hours ranged from 8 to 12 and were commonly 10 per day; in the fluorspar industry the 9-hour day and 6-day week was the rule; and in the quarrying industries the 10-hour day and 6-day week prevailed.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The minimum in the coal industry in November was due to the great coal strike in that month. The abnormal minimum in this industry accounts for the low minimum in the same month in the combined figures for all industries.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.



## MINES AND QUARRIES—KENTUCKY.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	938	437	114.6	Capital.....	\$201,247,725	\$26,786,640	651.3
Number of mines and quarries.....	864	442	95.5	Principal expenses:			
Number of petroleum and natural gas wells.....	5,214	1,109	370.2	Salaries.....	7,810,616	965,148	657.5
Number of natural-gas gasoline plants.....	7			Wages.....	49,550,588	7,837,514	533.0
Persons engaged.....	47,893	19,857	143.6	Contract work.....	3,285,715	184,903	1,066.2
Proprietors and firm members, total.....	386	338	14.2	Supplies and materials.....	\$ 15,659,195	1,322,406	1,064.1
Number performing manual labor in or about the mines, quarries, and wells.....	115	75		Fuel and power.....	2,522,749	218,499	1,064.6
Salaried employees.....	3,944	1,022	285.9	Royalties and rents.....	5,514,424	422,579	1,275.9
Wage earners (average number).....	43,563	18,297	138.1	Taxes.....	2,605,300	96,122	2,610.4
Power used (horsepower).....	148,898	53,208	179.9	Value of products.....	98,486,910	12,100,075	713.9

<sup>1</sup> Percentages are omitted where base is less than 100.<sup>2</sup> Includes cost of natural gas purchased as material and for resale.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	938	43,563	100.0	\$98,486,910	100.0	Flourspar.....	29	370	0.8	\$777,405	0.8
Coal, bituminous.....	635	39,769	91.3	72,432,840	73.5	Clay.....	18	269	0.6	375,577	0.4
Petroleum and natural gas.....	196	2,119	4.9	23,329,521	23.7	Sandstone.....	5	56	0.1	91,363	0.1
Limestone.....	47	676	1.6	1,126,109	1.1	Barytes.....	5	5	( <sup>1</sup> )	9,375	( <sup>1</sup> )
						All other industries <sup>2</sup> .....	3	299	0.7	344,720	0.3

<sup>1</sup> Less than one-tenth of 1 per cent.<sup>2</sup> Includes enterprises in industries as follows: Asphalt, 1; mineral pigments, 1; phosphate rock, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	938	43,563	\$98,486,910	\$104,997	100.0	100.0	100.0
Corporation.....	703	42,021	94,408,284	134,293	74.9	96.5	95.9
Individual.....	132	658	1,048,571	7,906	14.1	1.6	1.1
Firm.....	98	596	2,900,115	20,593	10.4	1.9	2.9
Other.....	5	18	134,940	20,988	0.5	( <sup>1</sup> )	0.1
COAL, BITUMINOUS.....	635	39,769	72,432,840	114,067	100.0	100.0	100.0
Corporation.....	472	38,597	70,606,050	149,593	74.3	97.1	97.5
Individual.....	96	536	782,735	8,153	15.1	1.3	1.1
Firm.....	67	636	1,042,055	15,558	10.6	1.6	1.4
PETROLEUM AND NATURAL GAS.....	196	2,119	23,329,521	119,028	100.0	100.0	100.0
Corporation.....	169	2,018	21,507,275	127,262	86.2	95.2	92.2
Individual.....	7	8	81,531	11,690	3.6	0.4	0.4
Firm.....	15	75	1,605,475	107,032	7.7	3.5	6.9
Other.....	5	18	134,940	20,988	2.6	0.8	0.6
LIMESTONE AND SANDSTONE.....	52	732	1,217,472	23,413	100.0	100.0	100.0
Corporation.....	23	527	910,617	39,592	44.2	72.0	74.8
Individual.....	21	126	159,809	7,610	40.4	17.2	13.1
Firm.....	8	79	147,046	18,381	15.4	10.8	12.1
FLUORSPAR.....	29	370	777,405	26,807	100.0	100.0	100.0
Corporation.....	20	322	672,588	23,639	69.0	87.0	86.5
Firm <sup>2</sup> .....	9	48	104,817	11,646	31.0	13.0	13.5
BARYTES.....	5	5	9,375	1,875	100.0	100.0	100.0
Individual.....	5	5	9,375	1,875	100.0	100.0	100.0

<sup>1</sup> Less than one-tenth of 1 per cent.<sup>2</sup> Includes 2 individuals.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	938	100.0	43,563	100.0	<b>PETROLEUM AND NATURAL GAS..</b>	196	100.0	2,119	100.0
No wage earners.....	36	3.8	.....	.....	No wage earners.....	32	16.3	.....	.....
1 to 5.....	266	28.4	683	1.6	1 to 5.....	90	45.9	182	8.6
6 to 20.....	273	29.1	3,022	6.9	6 to 20.....	49	25.0	464	21.9
21 to 50.....	151	16.1	4,930	11.3	21 to 50.....	14	7.1	436	20.6
51 to 100.....	110	11.7	7,858	18.0	51 to 100.....	7	3.6	500	23.6
101 to 500.....	94	10.0	17,734	40.7	101 to 500.....	4	2.0	537	25.3
501 to 1,000.....	5	0.5	3,368	7.7					
Over 1,000.....	3	0.3	5,968	13.7					
<b>COAL, BITUMINOUS</b> .....	635	100.0	39,769	100.0	<b>LIMESTONE AND SANDSTONE</b> .....	52	100.0	732	100.0
No wage earners.....	1	0.2	.....	.....	1 to 5.....	20	38.5	60	8.2
1 to 5.....	138	21.7	390	1.0	6 to 20.....	21	40.4	271	37.0
6 to 20.....	180	28.3	2,074	5.2	21 to 50.....	9	17.3	275	37.6
21 to 50.....	122	19.2	4,024	10.1	51 to 100.....	2	3.8	126	17.2
51 to 100.....	97	15.3	6,969	17.8					
101 to 500.....	89	14.0	16,976	42.7	<b>FLUORSPAR</b> .....	29	100.0	370	100.0
501 to 1,000.....	5	0.8	3,368	8.5	No wage earners.....	2	6.9	.....	.....
Over 1,000.....	3	0.5	5,968	15.0	1 to 5.....	8	27.6	24	6.5
					6 to 20.....	14	48.3	135	36.5
					21 to 50.....	4	13.8	140	37.8
					51 to 100.....	1	3.4	71	19.2

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
<b>All industries</b> .....	1,902	43,563	55	1,766	69	2,014	479	31,643	266	7,897	17	86	16	227
Coal, bituminous.....	634	39,769	51	1,718	66	2,000	439	30,976	78	5,075	.....	.....	.....	.....
Petroleum and natural gas.....	164	2,119	2	3	1	5	25	531	103	1,267	17	86	16	227
Limestone and sandstone.....	52	732	1	43	1	4	4	75	46	610	.....	.....	.....	.....
Fluorspar.....	27	370	.....	.....	.....	.....	4	21	23	349	.....	.....	.....	.....
All other industries.....	25	573	1	2	1	5	7	40	16	526	.....	.....	.....	.....

<sup>1</sup> Exclusive of 36 enterprises employing no wage earners in industries as follows: Clay, 1; coal, bituminous, 1; fluorspar, 2; petroleum and natural gas, 32.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries</b> .....	43,631	44,012	40,995	41,042	40,155	41,221	42,279	46,305	47,420	47,452	<b>48,884</b>	35,589	48,208	72.8
<b>Producing enterprises</b> .....	43,563	43,980	40,949	40,949	40,081	41,154	42,203	46,231	47,350	47,373	<b>48,684</b>	35,516	48,136	72.7
Coal, bituminous.....	39,769	40,839	37,890	37,742	36,608	37,626	38,507	41,875	42,919	42,946	<b>44,832</b>	31,408	44,346	70.5
Petroleum and natural gas.....	2,119	1,371	1,955	1,955	1,984	2,032	2,096	2,225	<b>2,327</b>	2,309	2,248	2,218	2,195	80.2
Limestone.....	376	344	351	468	637	784	773	835	<b>968</b>	379	788	716	533	38.2
Fluorspar.....	370	538	336	288	293	337	293	320	375	492	520	441	309	44.2
Clay.....	269	262	263	261	248	245	233	256	269	282	304	311	303	71.7
Sandstone.....	56	5	23	51	64	70	67	74	69	82	67	57	43	6.1
Barytes.....	5	.....	4	4	4	4	4	4	7	6	11	8	8	36.4
All other industries.....	299	119	131	180	193	205	240	293	471	377	374	357	349	20.1
<b>Nonproducing enterprises</b> .....	69	32	46	93	74	67	76	74	70	79	60	73	72	34.4
Coal, bituminous.....	56	30	33	71	55	57	64	63	63	62	52	56	66	42.3
Petroleum and natural gas.....	12	2	13	22	19	10	12	11	7	17	8	17	6	9.1

MINES AND QUARRIES—KENTUCKY.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.								NONPRODUCING ENTERPRISES.			
		Total.	Coal, bituminous.	Petroleum and natural gas.	Limestone.	Fluor-spar.	Clay.	Sand-stone.	Bar-rytes.	All other. <sup>1</sup>	Total.	Petroleum and natural gas.	Coal, bituminous.
Number of enterprises.....	949	938	635	196	47	29	18	5	5	3	11	8	3
Number of mines and quarries.....	867	864	742	.....	50	40	19	5	5	3	.....	.....	3
Number of petroleum and natural-gas wells.....	5,214	5,214	.....	5,214	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number of natural-gas gasoline plants.....	7	7	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....
Capital.....	\$201,811,996	\$201,247,725	\$137,896,306	\$56,788,065	\$975,318	\$3,213,302	\$728,301	\$189,242	\$610	\$1,456,581	\$504,271	\$332,326	\$231,945
Principal expenses:													
Salaries and wages—													
Officers.....	\$2,477,087	\$2,472,087	\$2,041,661	\$299,998	\$27,365	\$56,200	\$8,283	\$8,430	.....	\$30,150	\$5,000	\$900	\$4,200
Superintendents and managers.....	\$2,558,488	\$2,542,675	\$2,095,162	\$345,020	\$16,949	\$43,044	\$17,451	\$2,425	.....	\$22,624	\$15,793	\$9,192	\$6,600
Technical employees.....	\$452,667	\$452,547	\$388,598	\$38,328	.....	\$1,500	\$3,115	\$2,100	.....	\$23,906	\$120	\$120	.....
Clerks, etc.....	\$1,844,883	\$1,843,307	\$1,647,236	\$147,994	\$8,405	\$10,871	\$8,097	\$900	.....	\$22,104	\$1,576	\$930	\$646
Wage earners.....	\$49,622,104	\$49,550,588	\$45,615,853	\$2,646,512	\$526,099	\$281,273	\$222,789	\$35,687	\$2,822	\$220,493	\$71,516	\$13,291	\$53,225
Supplies and materials.....	\$15,734,345	\$15,613,091	\$10,944,940	\$4,006,774	\$215,319	\$150,893	\$43,029	\$11,710	\$87	\$245,339	\$116,254	\$56,785	\$59,469
Cost of natural gas purchased as material and for resale.....	\$41,104	\$41,104	.....	\$41,104	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fuel.....	\$1,941,526	\$1,937,821	\$1,553,058	\$233,411	\$65,073	\$43,667	\$5,056	\$7,883	.....	\$30,173	\$3,705	\$2,355	\$1,350
Power.....	\$585,065	\$584,928	\$568,435	.....	\$9,249	.....	.....	.....	.....	\$7,244	\$137	.....	\$137
Royalties and rents.....	\$5,827,674	\$5,814,424	\$1,724,793	\$3,970,910	\$7,557	\$93,563	\$5,233	\$71	\$2,000	\$10,300	\$13,250	\$6,274	\$6,976
Taxes.....	\$2,606,388	\$2,606,300	\$1,617,639	\$861,974	\$5,223	\$8,931	\$4,605	\$770	.....	\$3,148	\$1,088	\$928	\$160
Contract work.....	\$3,332,548	\$3,265,715	\$199,012	\$2,912,770	\$1,666	\$145,916	\$3,708	.....	\$2,643	.....	\$66,833	\$65,914	\$919
Expenditures for development (Included in the above items).....	\$13,103,076	\$12,847,964	\$5,506,157	\$6,829,041	\$1,500	\$158,391	\$7,906	.....	.....	\$344,969	\$255,112	\$147,371	\$107,741
Value of products.....	\$98,486,910	\$98,486,910	\$72,432,840	\$23,329,521	\$1,126,106	\$777,406	\$375,577	\$91,363	\$9,375	\$344,720	.....	.....	.....
Persons engaged in industry.....	48,026	47,893	43,347	2,634	764	444	297	66	10	341	133	70	63
Proprietors and firm members (total).....	435	386	268	59	39	21	3	1	5	.....	49	48	1
Number performing manual labor.....	115	115	96	9	10	.....	.....	.....	.....	.....	.....	.....	.....
Salaries officers.....	809	805	655	102	13	18	8	4	.....	5	4	2	2
Superintendents and managers.....	1,127	1,118	876	180	15	24	9	2	.....	12	9	6	3
Technical employees.....	331	331	301	16	.....	1	2	2	.....	9	.....	.....	.....
Clerks, etc.....	1,693	1,693	1,488	158	11	10	6	1	.....	16	3	2	1
Wage earners (average number).....	43,631	43,563	39,769	2,119	676	370	269	56	5	299	68	12	56
Wage earners by occupation (Dec. 15):													
Above ground (total).....	13,382	13,321	9,168	2,297	886	320	163	83	29	375	61	19	42
Below ground (total).....	36,364	36,339	36,038	.....	.....	140	161	.....	.....	.....	25	.....	25
Foremen, shift bosses, etc.—													
Above ground.....	448	445	369	.....	.....	31	17	4	3	4	3	.....	3
Below ground.....	953	952	934	.....	.....	10	8	.....	.....	.....	1	.....	1
Enginemen, hoistmen, electricians, mechanics, etc.—													
Above ground.....	3,879	3,860	2,160	1,491	40	106	11	8	.....	42	19	6	13
Below ground.....	1,604	1,604	1,601	.....	.....	3	.....	.....	.....	.....	.....	.....	.....
Miners, quarrymen, and drillmen, including their helpers—													
Above ground.....	1,482	1,482	864	.....	.....	415	27	46	50	4	76	.....	.....
Below ground.....	19,599	19,584	19,402	.....	.....	69	113	.....	.....	.....	15	.....	15
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—													
Above ground.....	1,578	1,575	1,320	.....	.....	196	17	26	.....	17	3	.....	3
Below ground.....	6,904	6,904	6,838	.....	.....	.....	26	40	.....	.....	.....	.....	.....
Muckers, loaders, laborers, and others not classified—													
Above ground.....	5,832	5,796	4,442	806	187	51	76	5	21	208	36	13	28
Below ground.....	7,304	7,295	7,263	.....	.....	32	.....	.....	.....	.....	9	.....	9
Wage earners employed in mills and beneficiating plants—													
Above ground.....	163	163	13	.....	.....	18	100	.....	.....	16	.....	.....	.....
Mineral and oil land operated..... acres.	1,119,780	1,093,641	731,116	323,015	1,964	5,232	26,850	440	947	4,057	26,139	21,109	5,030
Land controlled, total..... acres.	1,222,002	1,195,834	832,007	323,015	2,159	5,782	27,217	650	947	4,057	26,168	21,109	5,059
Mineral and oil land owned.....	510,083	506,713	451,374	20,213	1,731	2,893	26,303	437	165	3,597	3,870	70	3,300
Mineral and oil land leased.....	609,992	587,223	280,377	302,802	253	2,839	547	3	782	460	22,769	21,039	1,730
Timber and other lands owned and leased.....	101,927	101,898	100,596	.....	.....	175	550	367	210	.....	29	.....	29
Power used: Aggregate horsepower.....	149,579	148,893	126,804	13,795	4,485	2,293	226	640	.....	650	686	106	580
Prime movers (horsepower, total).....	102,582	102,176	81,253	13,795	3,569	2,293	226	640	.....	400	406	106	300
Steam engines—													
Number.....	722	716	442	151	55	42	8	14	.....	4	6	4	2
Horsepower.....	66,193	65,827	57,005	2,738	3,329	1,536	179	640	.....	400	366	66	300
Steam turbines—													
Number.....	43	43	43	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Horsepower.....	23,786	23,786	23,786	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Internal-combustion engines—													
Number.....	818	815	64	659	12	72	8	.....	.....	.....	3	3	.....
Horsepower.....	12,603	12,563	462	11,057	240	757	47	.....	.....	.....	40	40	.....
Purchased power (horsepower, total).....	46,997	46,717	45,551	.....	.....	.....	.....	.....	.....	250	280	.....	280
Electric motors operated by purchased current—													
Number.....	1,176	1,174	1,143	.....	.....	25	.....	.....	.....	6	3	.....	2
Horsepower.....	46,997	46,717	45,551	.....	.....	916	.....	.....	.....	250	280	.....	280
Electric motors run by current generated by enterprise using:													
Number.....	1,955	1,953	1,925	1	4	21	.....	2	.....	.....	2	.....	2
Horsepower.....	53,957	53,817	53,222	1	240	329	.....	25	.....	.....	140	.....	140
Fuel used:													
Coal, bituminous, tons, 2,000 lbs.....	725,101	724,385	679,943	8,406	14,960	9,183	1,127	2,040	.....	8,726	716	176	540
Wood..... cords.....	675	675	.....	.....	70	570	.....	35	.....	.....	.....	.....	.....
Fuel oil..... barrels.....	38,148	38,148	467	37,639	9	15	18	.....	.....	.....	.....	.....	.....
Gasoline and other volatile oils..... barrels.....	12,077	12,069	1,338	9,437	322	780	42	.....	.....	150	8	8	.....
Natural gas..... 1,000 cubic feet.....	752,145	751,455	.....	751,455	.....	.....	.....	.....	.....	.....	600	600	.....

<sup>1</sup> Includes enterprises as follows: Asphalt, 1; mineral pigments, 1; phosphate rock, 1.

<sup>2</sup> Includes 8 wage earners under 16 years of age.

## LOUISIANA.

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Louisiana, which ranks thirtieth among the states in size (land area 45,409 square miles) and twenty-second in population (1,798,509 in 1920), ranked nineteenth in total value of mineral products for 1919. The state ranked twenty-sixth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The mineral industries reported for Louisiana in 1919 were petroleum and natural gas, sulphur, and limestone. The mining of salt was an important industry in Louisiana in 1919 but was not included in the census of mines and quarries. As the sulphur and limestone industries each reported only one producing enterprise, statistics for 1919 can be shown only for petroleum and natural gas. The statistics for the petroleum and natural-gas industry here presented include data on the operation of plants engaged in extraction of gasoline from natural gas, whether such plants were connected with well operations or not. Reports were received on operations in nine northern and north-western Louisiana parishes included in the Mid-Continent Oil Field, which extends into Texas, Oklahoma, and Kansas, and six southern Louisiana parishes in the Gulf Coast Oil Field, which extends into Texas.

The gross value of products of the petroleum and natural-gas industry in the state of Louisiana for 1919 was \$32,016,085, which gave the state eighth rank in the United States in this industry. This amount, however, includes a duplication in the value of natural gas, which was sold by some operators for use as material or for resale by other producers who again reported its value. Deducting this duplication, \$740,522, leaves \$31,275,563 as the net value of products, an increase of 1,340 per cent over the corresponding amount (\$2,170,786) reported at the census of 1909. The figures for 1919 include also small sums received by operators for power sold and work or miscellaneous services for other enterprises.

In addition to operations by producing petroleum and natural-gas enterprises, six enterprises reported relatively small amounts expended for development of nonproductive properties.

Table 1 presents comparative statistics for 1919 and 1909. As the increases shown for capital, principal expenses, and value of products are largely augmented by general price increases in recent years they should not be used as a measure of growth of the petroleum and natural-gas industry in Louisiana.

The character of organizations operating petroleum and natural-gas enterprises in Louisiana in 1919 is shown in Table 2, which brings out the preponderance of corporations over other forms of organization.

The size of producing enterprises, as measured by average number of wage earners, is shown in Table 3. One hundred and twenty-six enterprises, or 94.7 per cent of the total number, had no wage earners or fewer than 101 each and the wage earners employed were only 33.8 per cent of the total number. Seven enterprises, or 5.4 per cent of the total number, had more than 100 wage earners each and these employed 3,205 wage earners, or 66.2 per cent of the total number. It is to be noted, however, that these larger enterprises made combined reports for operations conducted in several localities and that the actual individual operations required fewer wage earners.

Table 4 shows that in more than three-fourths of the enterprises employing wage earners and for 83.1 per cent of the total number of wage earners the prevailing hours of labor were over 62 per week.

The statistics for wage earners presented in Table 5, showing the changes in the number employed month by month, reflect conditions prevailing in the industry during the census year.

Table 6 presents for 1919 statistics in detail for the petroleum and natural-gas industry in the state of Louisiana.

## MINES AND QUARRIES—LOUISIANA.

TABLE 1.—COMPARATIVE SUMMARY, FOR PETROLEUM AND NATURAL GAS, PRODUCING ENTERPRISES: 1919 AND 1909.

	1919	1909	Per cent of increase. <sup>1</sup>		1919	1909	Per cent of increase. <sup>1</sup>
Number of enterprises.....	133	31	329.0	Capital.....	\$81,682,666	\$8,049,682	914.7
Number of petroleum and natural-gas wells.....	2,479	246	907.7	Principal expenses:			
Number of natural-gas gasoline plants.....	20			Salaries.....	1,441,479	220,852	552.7
Persons engaged.....	5,669	717	690.7	Wages.....	7,035,514	573,305	1,127.2
Proprietors and firm members, total.....	58	72		Contract work.....	2,032,068	* 62,440	
Number performing manual labor in or about the wells.....	2	1		Supplies and materials <sup>2</sup> .....	8,393,076	620,659	1,252.3
Salaried employees.....	770	87	785.1	Fuel and power.....	1,428,787	20,746	6,787.0
Wage earners (average number).....	4,841	558	767.6	Royalties and rents.....	4,312,372	496,198	769.1
Power used (horsepower).....	79,249	5,345	1,382.7	Taxes.....	1,115,339	* 13,912	
				Value of products.....	32,016,085	2,177,986	1,370.0

<sup>1</sup> Percentages are omitted where base is less than 100.<sup>2</sup> Not strictly comparable with figures for 1919.<sup>3</sup> Includes cost of natural gas purchased for use as material and for resale.

TABLE 2.—CHARACTER OF ORGANIZATION, FOR PETROLEUM AND NATURAL GAS, PRODUCING ENTERPRISES: 1919.

CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
All enterprises.....	133	4,841	\$32,016,085	\$240,722	100.0	100.0	100.0
Corporation.....	109	4,754	31,375,953	237,853	82.0	93.2	98.0
Individual.....	7	40	202,459	28,923	5.3	0.8	0.6
Firm <sup>1</sup> .....	17	47	437,668	25,745	12.8	1.0	1.4

<sup>1</sup> Includes 1 other form of organization.

TABLE 3.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR PETROLEUM AND NATURAL GAS: 1919.

WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
All enterprises.....	133	100.0	4,841	100.0	21 to 50.....	14	10.5	436	9.0
No wage earners.....	15	11.3			51 to 100.....	10	7.5	727	15.0
1 to 5.....	53	39.8	121	2.5	101 to 500.....	5	3.8	1,416	29.3
6 to 20.....	34	25.6	352	7.3	501 to 1,000.....	1	0.8	763	15.5
					Over 1,000.....	1	0.8	1,037	21.4

TABLE 4.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR PETROLEUM AND NATURAL GAS: 1919.

	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enterprises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
All enterprises.....	1118	4,841	2	77	1	3	4	20	21	718	70	3,673	20	145

<sup>1</sup> Exclusive of 15 enterprises employing no wage earners.

MINES AND QUARRIES—LOUISIANA.

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TABLE 5.—WAGE EARNERS, BY MONTHS, FOR PETROLEUM AND NATURAL GAS: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All enterprises.....	4,783	4,049	<b>3,908</b>	4,202	4,250	4,118	4,351	4,486	4,976	5,460	5,636	6,384	<b>6,655</b>	58.6
Producing enterprises.....	4,841	4,030	<b>3,888</b>	4,182	4,224	4,065	4,332	4,453	4,944	5,435	5,585	6,331	<b>6,589</b>	58.8
Nonproducing enterprises.....	32	19	20	20	26	21	19	33	32	34	51	53	66	33.9

TABLE 6.—DETAILED STATISTICS FOR PETROLEUM AND NATURAL GAS: 1919.<sup>1</sup>

	Total.	Producing enterprises.	Nonproducing enterprises.		Total.	Producing enterprises.	Nonproducing enterprises.
Number of enterprises.....	139	133	6	Persons engaged in industry—Continued.			
Number of petroleum and natural-gas wells.....	2,479	2,479		Wage earners by occupation (Dec. 15).....	6,665	6,608	57
Number of natural-gas gasoline plants.....	20	20		Enginemen, firemen, drillers, pumpers, mechanics, etc.....	2,787	2,708	54
Capital.....	\$82,339,153	\$81,682,666	\$656,487	All other.....	3,908	3,905	3
Principal expenses:				Number of females included in wage earners reported above.....	3	1	2
Salaries and wages—				Oil and gas land operated.....acres..	350,312	329,342	20,970
Officers.....	\$247,083	\$246,855	\$178	Land controlled, total.....acres..	350,312	329,342	20,970
Superintendents and managers.....	\$602,733	\$584,153	\$18,585	Oil and gas land owned.....	16,849	16,819	30
Technical employees.....	\$64,652	\$63,652	\$1,000	Oil and gas land leased.....	333,463	312,523	20,940
Clerks, etc.....	\$551,065	\$546,819	\$4,246	Power used: Aggregate horsepower.....	79,430	79,249	181
Wage earners.....	\$7,082,532	\$7,035,514	\$47,318	Prime movers (horsepower, total).....	79,396	79,215	181
Supplies and materials.....	\$7,755,941	\$7,652,554	\$103,387	Steam engines—			
Cost of natural gas purchased as material and for resale.....	\$740,522	\$740,522		Number.....	895	889	6
Fuel.....	\$1,438,535	\$1,427,863	\$10,672	Horsepower.....	25,181	25,000	181
Power.....	\$924	\$924		Internal-combustion engines—			
Royalties and rents.....	\$4,712,875	\$4,312,372	\$400,503	Number.....	1,809	1,809	
Taxes.....	\$1,155,929	\$1,115,389	\$40,500	Horsepower.....	54,215	54,215	
Contract work.....	\$2,091,000	\$2,032,068	\$58,941	Purchased power (horsepower, total).....	34	34	
Expenditures for development (included in the above items).....	\$11,211,619	\$11,001,642	\$209,977	Electric motors operated by purchased current—			
Value of products.....	\$32,016,085	\$32,016,085		Number.....	2	2	
Persons engaged in industry.....	5,719	5,669	50	Horsepower.....	34	34	
Proprietors and firm members (total).....	58	58		Electric motors run by current generated by enterprise using:			
Number performing manual labor.....	2	2		Number.....	25	25	
Salaried officers.....	69	69		Horsepower.....	310	310	
Superintendents and managers.....	224	213	11	Fuel used:			
Technical employees.....	43	41	2	Wood.....cords..	1,256		1,256
Clerks, etc.....	452	447	5	Fuel oils.....barrels..	418,047	415,002	3,045
Wage earners (average number).....	4,873	4,841	32	Gasoline and other volatile oils.....barrels..	445	445	
				Natural gas.....1,000 cubic feet..	13,582,304	13,546,954	5,280

<sup>1</sup> In order to avoid disclosure of individual operations, statistics for 1 limestone and 1 sulphur enterprise are not shown.

<sup>2</sup> Exclusive of 1 enterprise operating 2 plants producing also carbon black, included in the census of manufactures.

## MAINE.

Maine, which ranks thirty-eighth among the states in size (land area 29,895 square miles) and thirty-fifth in population (768,014 in 1920), ranked forty-first in the value of mineral products in 1919. On the basis of total number of persons engaged in the mining industries and the average number of wage earners employed it ranked thirty-ninth.

The total value of products of all mines and quarries in the state of Maine in 1919 was \$1,823,442, which was a decrease of 11.3 per cent as compared with the corresponding amount for 1909. Decreases in the number of enterprises, individual mines and quarries operated, persons engaged, and in the capital invested, as shown in Table 1, marked the decline of mining industries in the state of Maine. Decreases in salaries, wages, cost of supplies and materials, and value of products are smaller, because these items were affected by the general increase in prices in 1919 as compared with 1909. The large increase in taxes shown is accounted for by the impost of Federal income taxes since the census of 1909.

The mining and quarrying industries reported for 1919, classified by principal products and listed in the order of value of products, were granite, slate, feldspar, and limestone. This listing and statistics herein given do not take into account the production of a large amount of limestone used by the producers at the quarries in the manufacture of lime, which operations are included in the census of manufactures. In addition to the products indicated by the industry designation, quartz, or silica, and tourmaline were also produced as a by-product by enterprises engaged in the mining of feldspar.

The leading mineral industry in Maine in 1919 was granite quarrying which included 42 enterprises, or 84 per cent of the total number reported. This industry employed 76.3 per cent of the total number of wage earners and produced stone valued at \$1,300,996,

or 71.3 per cent of the total value of products of all mines and quarries in the state. The value of the granite produced in this state was 7.1 per cent of the total value of products of the granite industry throughout the United States (\$18,279,345) in 1919, and gave Maine sixth rank among the granite-producing states.

Development work was reported in the state of Maine, in 1919, for only one nonproducing mining property (a molybdenum deposit).

Table 2 shows that among the operators of mining enterprises in Maine individual ownership outnumbered all other forms of organization. However, the corporations, which conducted 34 per cent of the number of enterprises, employed 86.1 per cent of the total number of wage earners and reported 86.8 per cent of the total value of products.

The relatively large number of small enterprises, as determined by the average number of wage earners employed, is shown in Table 3. Ninety-four per cent of the total number of enterprises had no wage earners or less than 101 each and employed 62 per cent of the total number of wage earners. Only 3 enterprises, or 6 per cent of the total number, employed more than 100 wage earners each, and these enterprises employed 38 per cent of the total number of wage earners. These 3 large enterprises were in the granite industry, the leading industry in the state.

Table 4 shows that for a majority of the enterprises and for 81.1 per cent of the wage earners the prevailing hours of labor were 44 to 53 per week.

The statistics for wage earners presented in Table 5, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 6 presents for 1919 statistics in detail for the state as a whole and for granite, the only industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	50	97	.....	Capital.....	\$1,692,082	\$3,825,931	-55.8
Number of mines and quarries.....	51	102	-50.0	Principal expenses:			
Persons engaged.....	1,093	2,359	-53.7	Salaries.....	118,279	119,626	-1.1
Proprietors and firm members, total.....	52	98	.....	Wages.....	1,051,796	1,332,242	-21.1
Number performing manual labor in or about the mines and quarries.....	26	60	.....	Contract work.....	32,368	6,728	381.1
Salaried employees.....	62	117	-47.0	Supplies and materials.....	203,137	219,579	-7.5
Wage earners (average number).....	979	2,144	-54.3	Fuel and power.....	122,792	84,693	45.0
Power used (horsepower).....	6,277	8,141	-22.9	Royalties and rents.....	9,986	16,302	-38.7
				Taxes.....	34,283	16,241	110.9
				Value of products.....	1,823,442	2,056,063	-11.3

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	50	979	\$1,823,442	\$36,469	100.0	100.0	100.0
Corporation.....	17	843	1,581,949	93,056	34.0	86.1	86.8
Individual.....	18	93	153,843	8,547	36.0	9.5	8.4
Firm <sup>1</sup> .....	15	43	57,650	5,843	30.0	4.4	4.8
GRANITE.....	42	747	1,300,996	30,976	100.0	100.0	100.0
Corporation.....	10	614	1,061,749	106,175	23.8	82.2	81.6
Individual.....	18	93	153,843	8,547	42.9	12.4	11.8
Firm <sup>1</sup> .....	14	40	85,404	6,100	33.3	5.4	6.6

<sup>1</sup> Includes 1 other form of organization.

TABLE 3.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	50	100.0	979	100.0	GRANITE.....	42	100.0	747	100.0
No wage earners.....	6	12.0			No wage earners.....	5	11.9		
1 to 5.....	23	46.0	61	6.2	1 to 5.....	21	50.0	53	7.1
6 to 20.....	11	22.0	117	12.0	6 to 20.....	9	21.4	96	12.9
21 to 50.....	2	4.0	80	8.2	21 to 50.....	2	4.8	80	10.7
51 to 100.....	5	10.0	349	35.6	51 to 100.....	2	4.8	146	19.5
101 to 500.....	3	6.0	372	38.0	101 to 500.....	3	7.1	372	49.8

TABLE 4.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
	Enterprises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries.....	144	979	1	3	1	11	34	794	8	171
Granite.....	37	747	1	3	1	11	33	729	2	47
All other industries.....	7	232					1	65	6	164

<sup>1</sup> Exclusive of 6 enterprises employing no wage earners in industries as follows: Granite, 5; limestone, 1.

TABLE 5.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	979	461	<b>438</b>	712	968	1,236	<b>1,288</b>	1,175	1,204	1,141	1,116	1,076	933	34.0
Granite.....	747	251	<b>244</b>	500	783	1,008	<b>1,044</b>	933	951	884	870	833	683	23.4
All other industries.....	232	210	<i>194</i>	212	205	228	244	242	253	287	246	243	250	75.5



## MINES AND QUARRIES—MAINE.

TABLE 6.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.				PRODUCING ENTERPRISES.		
	Total.	Granite.	All other. <sup>1</sup>		Total.	Granite.	All other. <sup>1</sup>
Number of enterprises.....	50	42	8	Persons engaged, etc.—Continued.			
Number of mines and quarries.....	51	42	9	Wage earners, etc.—Continued.			
Capital.....	\$1,662,082	\$1,044,000	\$648,082	Miners, quarrymen, and drillmen, including their helpers—			
Principal expenses:				Above ground.....	341	318	23
Salaries and wages—				Below ground.....	27		27
Officers.....	\$57,577	\$31,500	\$26,077	Timbermen, trackmen, and men engaged in hauling, tramming, etc.—			
Superintendents and managers.....	\$38,499	\$27,761	\$10,738	Above ground.....	147	113	34
Technical employees.....	\$6,124	\$6,124		Muckers, loaders, laborers, and others not classified—			
Clerks, etc.....	\$16,079	\$9,812	\$7,267	Above ground.....	78	72	6
Wage earners.....	\$1,051,796	\$905,865	\$245,931	Below ground.....	19		19
Supplies and materials.....	\$203,187	\$116,060	\$87,127	Wage earners employed in mills and beneficiating plants—			
Fuel.....	\$77,561	\$71,353	\$6,208	Above ground.....	418	319	99
Power.....	\$45,231	\$17,067	\$28,164	Mineralland operated..... acres..	3,562	2,016	1,546
Royalties and rents.....	\$9,986	\$5,242	\$4,744	Land controlled, total..... acres..	7,229	4,126	3,094
Taxes.....	\$34,253	\$17,825	\$16,428	Mineralland owned.....	2,602	1,609	993
Contract work.....	\$32,368	\$2,800	\$29,568	Mineralland leased.....	995	442	553
Expenditures for development (included in the above items).....	\$10,807	\$5,695	\$5,112	Timber and other lands owned and leased.....	3,623	2,075	1,548
Value of products.....	\$1,823,442	\$1,300,996	\$522,446	Power used: Aggregate horsepower.....	6,277	4,050	2,227
Persons engaged in industry.....	1,093	839	254	Prime movers (horsepower, total).....	3,562	3,313	249
Proprietors and firm members (total).....	52	50	2	Steam engines—			
Number performing manual labor.....	36	35	1	Number.....	74	72	2
Salaried officers.....	15	5	10	Horsepower.....	3,397	3,187	210
Superintendents and managers.....	24	19	5	Internal-combustion engines—			
Technical employees.....	4	4		Number.....	14	11	3
Clerks, etc.....	19	14	5	Horsepower.....	165	126	39
Wage earners (average number).....	979	747	232	Purchased power (horsepower, total).....	2,715	737	1,978
Wage earners by occupation (Dec. 15):				Electric motors operated by purchased current—			
Above ground (total).....	1,159	964	195	Number.....	57	15	42
Below ground (total).....	61		51	Horsepower.....	2,715	737	1,978
Foremen, shift bosses, etc.—				Fuel used:			
Above ground.....	48	42	6	Coal bituminous..... tons, 2,000 pounds..	9,586	9,097	489
Below ground.....	5		5	Wood..... cords..	250	75	175
Engineers, hoistmen, electricians, mechanics, etc.—				Gasoline and other volatile oils..... barrels..	236	198	38
Above ground.....	127	100	27				

<sup>1</sup> Includes enterprises as follows: Feldspar, 4; limestone, 1; slate, 3.

## MARYLAND.

Maryland, which ranks forty-first among the states in size (land area 9,941 square miles) and twenty-eighth in population (1,449,661 in 1920), ranked thirtieth in the value of mineral products for 1919. The state ranked twenty-fifth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total value of products of mines and quarries in the state of Maryland in 1919 was \$9,698,577, an increase of 67.7 per cent as compared with the corresponding amount reported at the census of 1909. This figure includes the value of by-products and receipts for work or miscellaneous services for other enterprises, which in 1919 amounted to \$23,275.

The increases in value of products, wages, and cost of supplies and materials and fuel and power, as shown in Table 1, are largely due to general price increases during the census interval and are therefore not a measure of progress in mining activities which were smaller in volume in 1919 than in 1909, as reflected by the decreases in number of mines and quarries operated, wage earners employed, and capital invested.

The mining industries reported in Maryland in 1919, classified according to principal products and listed in order of value of products, were coal, granite, basalt, limestone, silica (quartz or flint), slate, sandstone, marble, clay, feldspar, talc and soapstone, chromite, asbestos, and iron ore. In addition to products indicated by these industry classifications, one silica enterprise and one talc and soapstone enterprise produced feldspar; one marble enterprise produced limestone; one clay mine produced mica and another produced mineral pigments. The iron ore produced was used entirely in the manufacture of metallic paints. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The principal mining industry in Maryland in 1919 was bituminous coal mining in the extreme western counties, Allegany and Garrett. This industry included 58 out of a total of 126 mining enterprises in the state, em-

ployed 85.7 per cent of the total number of wage earners, and reported products valued at \$8,195,667, or 84.5 per cent of the total value of products.

The quarrying industries were next in importance and accounted for about one-eighth of the wage earners and value of products. Among the relatively small industries the production of silica (quartz or flint) was important in Maryland, as the state led all others in the output of quartz.

The mining enterprises in the state in 1919 are classified according to form of operating organization in Table 3, which shows that corporations outclassed all other forms.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the 126 enterprises, one had no wage earners and 112 had fewer than 101 each and employed only 40.8 per cent of the 5,628 wage earners reported. The 13 larger enterprises were in the coal industry and employed more than two-thirds of the wage earners in that industry and more than one-half of the wage earners reported for all mining and quarrying enterprises in the state.

Table 5 shows that in a majority of enterprises and for 85.7 per cent of the wage earners the prevailing hours of labor were 44 to 53 per week. The proportion of enterprises and wage earners for which such hours prevailed in the coal-mining industry was even larger than for all industries combined. In the coal industry the 8-hour day and 6-day week was the rule. In the quarrying industries the hours of labor per week were commonly 54 to 62 with a 9 or 10-hour day and 6-day week.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The minimum shown in the coal industry in November is abnormal as to time of year because of the great coal strike in that month.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

## MINES AND QUARRIES—MARYLAND.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	126	126		Capital.....	\$21,078,980	\$25,160,678	-16.3
Number of mines and quarries.....	161	173	-6.9	Principal expenses:			
Persons engaged.....	6,116	7,646	-20.0	Salaries.....	789,669	328,447	140.4
Proprietors and firm members, total.....	84	101	-16.8	Wages.....	6,151,744	3,339,682	84.2
Number performing manual labor in or about the mines and quarries.....	26	48		Contract work.....	16,890	8,303	108.5
Salaried employees.....	404	355	13.8	Supplies and materials.....	1,178,074	478,555	146.2
Wage earners (average number).....	5,628	7,190	-21.7	Fuel and power.....	308,766	104,156	196.4
Power used (horsepower).....	18,660	18,118	3.0	Royalties and rents.....	137,562	133,796	2.8
				Taxes.....	208,137	88,559	135.0
				Value of products.....	9,698,577	5,782,045	67.7

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	126	5,628	100.0	\$9,698,577	100.0	Limestone.....	11	149	2.6	\$241,638	2.5
Coal, bituminous.....	58	4,826	85.7	8,195,667	84.5	Slate.....	4	85	1.5	76,683	0.8
Granite.....	9	235	4.2	496,651	5.1	Clay.....	8	21	0.4	31,758	0.3
Basalt.....	10	183	3.3	399,075	3.8	Feldspar.....	8	11	0.2	30,468	0.3
						All other industries <sup>1</sup> .....	18	118	2.1	257,637	2.7

<sup>1</sup> Includes enterprises in industries as follows: Asbestos, 1; chromite, 1; iron ore, 1; marble, 2; sandstone, 2; silica, 9; talc and soapstone, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	126	5,628	\$9,698,577	\$76,973	100.0	100.0	100.0
Corporation.....	73	4,955	8,591,916	117,697	57.9	88.0	88.6
Individual.....	35	198	339,473	9,697	27.8	3.4	3.5
Firm.....	18	480	767,268	42,625	14.3	8.5	7.9
COAL, BITUMINOUS.....	58	4,826	8,195,667	141,305	100.0	100.0	100.0
Corporation.....	44	4,406	7,573,229	172,232	75.9	91.3	92.5
Individual.....	8	52	76,400	9,550	13.8	1.1	0.9
Firm.....	6	366	541,038	90,173	10.3	7.6	6.6
GRANITE, BASALT, LIMESTONE, AND SLATE.....	34	652	1,183,047	34,796	100.0	100.0	100.0
Corporation.....	18	438	769,017	42,723	52.9	67.2	65.0
Individual.....	10	116	208,810	20,881	30.4	17.8	17.7
Firm.....	6	98	205,220	34,308	17.6	15.0	17.3

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES.....</b>	<b>126</b>	<b>100.0</b>	<b>5,628</b>	<b>100.0</b>					
No wage earners.....	1	0.8			<b>BASALT.....</b>	<b>10</b>	<b>100.0</b>	<b>183</b>	<b>100.0</b>
1 to 5.....	40	31.7	90	1.6	1 to 5.....	2	20.0	8	4.4
6 to 20.....	36	28.6	458	8.1	6 to 20.....	5	50.0	76	41.5
21 to 50.....	22	17.5	782	13.5	21 to 50.....	3	30.0	99	54.1
51 to 100.....	14	11.1	990	17.6					
101 to 500.....	12	9.5	1,915	34.0	<b>LIMESTONE.....</b>	<b>11</b>	<b>100.0</b>	<b>140</b>	<b>100.0</b>
Over 1,000.....	1	.8	1,412	25.1	1 to 5.....	8	72.7	31	20.8
					6 to 20.....	1	9.1	16	10.7
<b>COAL, BITUMINOUS.....</b>	<b>58</b>	<b>100.0</b>	<b>4,826</b>	<b>100.0</b>	21 to 50.....	1	9.1	40	32.9
1 to 5.....	5	8.6	12	0.2	51 to 100.....	1	9.1	58	35.6
6 to 20.....	16	27.6	198	4.1					
21 to 50.....	12	20.7	418	8.7	<b>SLATE.....</b>	<b>4</b>	<b>100.0</b>	<b>85</b>	<b>100.0</b>
51 to 100.....	12	20.7	870	18.0	6 to 20.....	2	50.0	22	25.9
101 to 500.....	12	20.7	1,915	39.7	21 to 50.....	2	50.0	68	74.1
Over 1,000.....	1	1.7	1,412	29.3					
<b>GRANITE.....</b>	<b>9</b>	<b>100.0</b>	<b>285</b>	<b>100.0</b>					
1 to 5.....	1	11.1	4	1.7					
6 to 20.....	4	44.4	62	26.4					
21 to 50.....	3	33.3	102	43.4					
51 to 100.....	1	11.1	67	28.5					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enterprises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
<b>All industries.....</b>	<b>126</b>	<b>5,628</b>	<b>1</b>	<b>20</b>	<b>8</b>	<b>144</b>	<b>79</b>	<b>4,825</b>	<b>35</b>	<b>620</b>	<b>2</b>	<b>19</b>
Coal, bituminous.....	58	4,826			6	133	51	4,668	1	25		
Granite.....	9	235			3	55	6	55	6	180		
Basalt.....	10	183	1	20	1	3	3	58	5	102		
Limestone.....	11	149			1	4	1	4	9	141	1	4
Slate.....	4	85						4	4	85		
Clay.....	8	21			1	8	3	4	4	9		
Feldspar.....	7	11					7	11				
All other industries.....	18	118					11	25	6	78	1	15

<sup>1</sup> Exclusive of 1 enterprise employing no wage earners in the feldspar industry.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by italic figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries.....</b>	<b>5,628</b>	<b>5,829</b>	<b>5,905</b>	<b>5,101</b>	<b>5,171</b>	<b>5,424</b>	<b>5,460</b>	<b>5,743</b>	<b>6,119</b>	<b>6,157</b>	<b>6,221</b>	<b>5,144</b>	<b>5,862</b>	<b>82.0</b>
Coal, bituminous.....	4,826	5,287	4,714	4,514	4,385	4,828	4,541	4,769	5,121	5,225	5,339	4,509	5,225	80.7
Granite.....	235	125	133	154	224	292	280	304	314	308	285	235	182	38.9
Basalt.....	183	69	94	96	225	228	243	239	216	212	206	119	27.7	
Limestone.....	149	180	122	105	144	167	165	173	192	170	153	151	115	54.7
Slate.....	85	92	98	80	69	79	91	89	84	82	81	77	70.4	
Clay.....	21	16	16	16	15	19	23	23	25	28	27	27	57.1	
Feldspar.....	11	9	13	12	8	8	8	8	8	15	15	15	27.8	
All other industries.....	118	101	121	100	114	116	118	132	133	126	116	127	112	75.2

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.								
	Total.	Coal, bituminous.	Granite.	Basalt.	Limestone.	Slate.	Clay.	Feldspar.	All other. <sup>1</sup>
Number of enterprises.....	126	58	9	10	11	4	8	8	18
Number of mines and quarries.....	161	92	9	10	11	4	8	8	19
Capital.....	\$21,078,980	\$17,226,789	\$627,625	\$336,217	\$219,873	\$652,142	\$23,550	\$3,700	\$1,984,084
Principal expenses:									
Salaries and wages—									
Officers.....	\$324,857	\$298,151	\$14,573	\$1,273	.....	\$400	.....	.....	\$15,460
Superintendents and managers.....	\$267,001	\$213,764	\$11,288	\$17,340	\$5,284	\$5,835	.....	\$1,200	\$12,290
Technical employees.....	\$39,098	\$39,098	.....	.....	.....	.....	.....	.....	.....
Clerks, etc.....	\$158,703	\$133,164	\$6,441	\$5,542	\$7,580	\$795	.....	.....	\$5,181
Wage earners.....	\$6,151,744	\$5,386,509	\$269,741	\$186,210	\$128,148	\$54,533	\$19,698	\$9,815	\$97,090
Supplies and materials.....	\$1,178,074	\$929,325	\$76,836	\$92,260	\$42,480	\$4,701	\$2,595	\$7,439	\$22,438
Fuel.....	\$247,837	\$133,388	\$49,897	\$23,492	\$14,065	\$7,334	.....	\$246	\$14,395
Power.....	\$60,029	\$50,041	\$1,232	\$1,200	\$1,738	\$2,821	.....	.....	\$3,897
Royalties and rents.....	\$137,662	\$109,627	\$12,509	\$3,418	\$2,995	.....	\$1,228	\$890	\$6,887
Taxes.....	\$208,137	\$180,071	\$3,607	\$3,545	\$3,316	\$2,766	\$305	\$68	\$3,459
Contract work.....	\$16,899	\$11,345	\$2,535	.....	.....	.....	.....	\$1,500	\$1,519
Expenditures for development (included in the above items).....	\$191,878	\$182,424	.....	.....	\$500	\$2,847	.....	.....	\$6,107
Value of products.....	\$9,698,577	\$8,195,667	\$495,651	\$369,075	\$241,638	\$76,683	\$31,758	\$30,468	\$257,637
Persons engaged in industry.....	6,116	5,180	259	210	169	93	29	22	154
Proprietors and firm members (total).....	84	29	3	14	9	.....	8	9	12
Number performing manual labor.....	26	10	2	2	.....	.....	2	3	7
Salaried officers.....	85	69	6	.....	.....	1	.....	.....	9
Superintendents and managers.....	125	93	7	9	2	5	.....	2	7
Technical employees.....	31	31	.....	.....	.....	.....	.....	.....	.....
Clerks, etc.....	163	132	8	4	9	2	.....	.....	8
Wage earners (average number).....	5,628	4,826	235	183	149	85	21	11	118
Wage earners by occupation (Dec. 15):									
Above ground (total).....	1,842	868	279	218	177	84	31	26	159
Below ground (total).....	4,469	4,448	.....	.....	.....	21	.....	.....	.....
Foremen, shift bosses, etc.—									
Above ground.....	69	40	10	9	3	1	.....	.....	6
Below ground.....	125	128	.....	.....	.....	2	.....	.....	.....
Enginemen, hoistmen, electricians, mechanics, etc.—									
Above ground.....	293	205	36	13	8	13	.....	1	17
Below ground.....	131	130	.....	.....	.....	1	.....	.....	.....
Miners, quarrymen, and drillmen, including their helpers—									
Above ground.....	501	116	117	71	63	36	4	19	75
Below ground.....	3,213	3,202	.....	.....	.....	11	.....	.....	.....
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—									
Above ground.....	163	130	16	.....	13	4	.....	.....	.....
Below ground.....	665	665	.....	.....	.....	.....	.....	.....	.....
Muckers, loaders, laborers, and others not classified—									
Above ground.....	768	373	91	125	90	19	27	6	37
Below ground.....	335	328	.....	.....	.....	7	.....	.....	.....
Wage earners employed in mills and beneficiating plants—									
Above ground.....	48	4	9	.....	.....	11	.....	.....	24
Number of wage earners under 16 years of age included in those reported above—									
Above ground.....	2	1	.....	.....	.....	.....	.....	.....	1
Mineral land operated..... acres..	57,470	53,442	396	244	232	401	388	57	2,310
Land controlled, total..... acres..	66,194	60,714	838	1,004	437	401	388	57	2,355
Mineral land owned.....	26,635	24,168	216	205	51	401	168	40	1,398
Mineral land leased.....	20,879	19,318	180	39	181	.....	280	17	914
Timber and other lands owned and leased.....	8,680	7,228	442	760	205	.....	.....	.....	45
Power used: Aggregate horsepower.....	18,660	12,470	2,398	1,285	542	403	.....	32	1,535
Prime movers (horsepower, total).....	14,018	8,506	2,258	1,210	390	270	.....	32	1,352
Steam engines—									
Number.....	172	90	24	14	14	7	.....	1	12
Horsepower.....	12,302	8,166	1,450	1,210	390	270	.....	16	800
Steam turbines—									
Number.....	1	.....	1	.....	.....	.....	.....	.....	.....
Horsepower.....	750	.....	750	.....	.....	.....	.....	.....	.....
Internal combustion engines—									
Number.....	24	14	3	.....	.....	.....	.....	1	6
Horsepower.....	516	340	58	.....	.....	.....	.....	16	102
Water wheels and turbines—									
Number.....	3	.....	.....	.....	.....	.....	.....	.....	3
Horsepower.....	450	.....	.....	.....	.....	.....	.....	.....	450
Purchased power (horsepower, total).....	4,642	3,984	135	75	152	133	.....	.....	183
Electric motors operated by purchased current—									
Number.....	139	113	4	1	6	12	.....	.....	3
Horsepower.....	4,642	3,984	135	75	152	133	.....	.....	183
Electric motors run by current generated by enterprise using:									
Number.....	94	76	13	.....	.....	.....	.....	.....	5
Horsepower.....	3,872	2,747	775	.....	.....	.....	.....	.....	350
Fuel used:									
Coal, bituminous..... tons, 2,000 pounds..	67,829	46,264	10,157	5,104	2,603	967	.....	20	2,714
Wood..... cords.....	65	.....	5	.....	60	.....	.....	.....	.....
Gasoline and other volatile oils..... barrels..	686	382	127	4	19	.....	.....	10	144

<sup>1</sup> Includes enterprises as follows: Asbestos, 1; chromite, 1; iron ore, 1; marble, 2; sandstone, 2; silica, 9; talc and soapstone, 2.

<sup>2</sup> Includes 1 coal-mining enterprise on Maryland and Pennsylvania state line reported as a Maryland operation.

<sup>3</sup> Includes 2 tons of anthracite coal.

## MASSACHUSETTS.

Massachusetts, which ranks forty-fourth among the states in size (land area 8,039 square miles) and sixth in population (3,852,356 in 1920), ranked thirty-sixth in value of mineral products for 1919. The state ranked thirty-sixth also in total number of persons engaged in the mining industries and thirty-eighth in the average number of wage earners employed.

The total value of products of all mines and quarries in Massachusetts in 1919 was \$4,175,699, which was an increase of 20.4 per cent over the value reported at the census of 1909. The total amount given as value of products includes the value of a small quantity of fuller's earth produced as a by-product by an enterprise classified as a basalt-quarrying operation, and also includes small amounts received for power sold and for miscellaneous services performed for other enterprises.

Decreases in the number of enterprises, in the number of individual mines and quarries operated, in the number of persons engaged, and in the capital invested in the mining industries, as shown in Table 1, marked the decline of mining and quarrying in the state of Massachusetts. Increases in salaries, wages, cost of supplies and materials and fuel and power, and in the value of products are largely due to general price increases since 1909, and are not indicative of growth in the industries. The large increase shown in taxes is accounted for by impost of Federal income taxes since 1909.

The mining and quarrying industries reported for 1919, classified by principal products and listed in order of value of products, were granite, basalt, marble, iron ore, limestone, talc and soapstone, silica, sandstone, fuller's earth, and clay. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

Granite quarrying, the leading mineral industry in Massachusetts, produced stone valued at \$2,405,165 in 1919, which amount is 57.6 per cent of the value of all mineral products in the state.

The industry next in importance, basalt quarrying, produced stone to the value of \$1,548,611, which is 37.1 per cent of the total value of products for the

state. All the stone quarrying industries combined, i. e., granite, basalt, marble, limestone, and sandstone, accounted for approximately 99 per cent of the value of all mineral products.

Table 3 shows that among the operators of mining enterprises in Massachusetts the corporation was the most common form of organization; 52.7 per cent of the total number of enterprises were corporations. They employed 78.8 per cent of all wage earners in the mining industries in the state and reported 77.2 per cent of the total value of all mineral products. The table also shows that in the granite industry ownership or control by individuals slightly exceeded that by corporations, but that the latter conducted larger and more important enterprises.

The relatively large number of small enterprises, as determined by the average number of wage earners employed, is brought out by Table 4. Of the total number of mining and quarrying enterprises, 93.2 per cent were in classes having less than 51 wage earners and such enterprises employed 62 per cent of the total number of wage earners. Enterprises employing more than 50 wage earners constituted 6.8 per cent of the total number of enterprises and employed 37.9 per cent of the total number of wage earners. Only one enterprise in this state in 1919 had more than 100 wage earners; this, in the granite industry, employed 343 wage earners, or 20.1 per cent of the total number.

Table 5 shows that in a majority of the enterprises and for approximately 60 per cent of the wage earners in all the mining industries in the state in 1919 the prevailing hours of labor were 44 to 53 per week. For more than two-thirds of the enterprises and for 86.3 per cent of the wage earners in the basalt industry the hours of labor per week were 54 to 62 and the 9-hour day was the rule.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

## MINES AND QUARRIES—MASSACHUSETTS.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	74	139	-46.8	Capital.....	\$4,882,574	\$5,054,093	-3.4
Number of mines and quarries.....	79	147	-46.3	Principal expenses:			
Persons engaged.....	1,910	3,588	-46.8	Salaries.....	324,602	212,258	52.1
Proprietors and firm members, total.....	50	121	-58.7	Wages.....	2,068,844	1,906,997	5.2
Number performing manual labor in or about the mines and quarries.....	10	43	-76.5	Contract work.....	11,186	16,272	-31.3
Salaried employees.....	156	176	-11.4	Supplies and materials.....	494,349	363,098	35.9
Wage earners (average number).....	1,704	3,291	-48.2	Fuel and power.....	263,345	153,258	71.8
Power used (horsepower).....	12,498	15,031	-16.9	Royalties and rents.....	59,067	55,409	6.6
				Taxes.....	83,009	40,187	106.6
				Value of products.....	4,175,699	3,467,888	20.4

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	74	1,704	100.0	\$4,175,699	100.0	Basalt.....	21	547	32.1	\$1,548,611	37.1
Granite.....	42	1,034	60.7	2,406,165	57.6	All other industries <sup>1</sup> .....	11	128	7.2	221,928	5.3

<sup>1</sup> Includes enterprises in industries as follows: Clay, 1; fuller's earth, 1; iron ore, 1; limestone, 1; marble, 3; sandstone, 1; silica, 2; talc and soapstone, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	74	1,704	\$4,175,699	\$56,428	100.0	100.0	100.0
Corporation.....	39	1,342	3,222,633	82,632	52.7	78.8	77.2
Individual.....	20	284	766,312	38,316	27.0	16.7	18.4
Firm <sup>1</sup> .....	15	78	186,754	12,480	20.3	4.6	4.5
GRANITE.....	42	1,034	2,406,165	57,266	100.0	100.0	100.0
Corporation.....	15	798	1,744,981	116,332	35.7	77.2	72.6
Individual.....	16	185	501,836	31,265	38.1	17.9	20.9
Firm.....	11	51	158,348	14,865	26.2	4.9	6.6
BASALT.....	21	547	1,548,611	73,743	100.0	100.0	100.0
Corporation.....	16	459	1,324,967	82,810	76.2	83.9	85.6
Unincorporated <sup>2</sup> .....	5	88	223,644	44,729	23.8	16.1	14.4

<sup>1</sup> Includes 2 other forms of organization.

<sup>2</sup> Includes individual, 2; firm, 1; and other, 2.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	74	100.0	1,704	100.0	BASALT.....	21	100.0	547	100.0
1 to 5.....	21	28.4	49	2.9	1 to 5.....	2	9.5	6	1.1
6 to 20.....	26	35.1	307	18.0	6 to 20.....	9	42.9	126	23.0
21 to 50.....	22	29.7	701	41.1	21 to 50.....	8	38.1	260	47.5
51 to 100.....	4	5.4	304	17.8	51 to 100.....	2	9.5	155	28.3
101 to 500.....	1	1.4	343	20.1					
GRANITE.....	42	100.0	1,034	100.0					
1 to 5.....	14	33.3	27	2.6					
6 to 20.....	14	33.3	160	15.5					
21 to 50.....	11	26.2	355	34.3					
51 to 100.....	2	4.8	149	14.4					
101 to 500.....	1	2.4	343	33.2					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—					
	Enter-prises.	Wage earners.	35 and under.		44 to 53.		54 to 62.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	74	1,704	1	12	46	1,080	27	612
Granite.....	42	1,034	1	12	34	926	7	96
Basalt.....	21	547			6	75	15	472
All other industries.....	11	123			6	79	5	44

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		Janu-ary.	Febru-ary.	March.	April.	May.	June.	July.	August.	Sep-tember.	Octo-ber.	Novem-ber.	Decem-ber.	
All industries.....	1,704	1,037	<i>1,017</i>	1,236	1,757	1,889	1,946	1,978	<b>2,032</b>	1,956	1,997	1,913	1,690	50.0
Granite.....	1,034	643	<i>635</i>	743	1,086	1,161	1,198	<b>1,212</b>	1,201	1,117	1,201	1,174	1,067	52.4
Basalt.....	547	305	<i>287</i>	366	578	599	613	640	688	798	677	667	496	40.5
All other industries.....	123	89	<i>95</i>	127	128	129	135	126	148	131	119	132	127	62.2

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.					PRODUCING ENTERPRISES.			
	Total.	Granite.	Basalt.	All other. <sup>1</sup>		Total.	Granite.	Basalt.	All other. <sup>1</sup>
Number of enterprises.....	74	42	21	11	Persons engaged in industry—Contd.				
Number of mines and quarries.....	79	43	23	13	Wage earners, etc.—Continued.				
Capital.....	\$4,882,574	\$3,146,126	\$1,026,570	\$709,878	Miners, loaders, laborers, and others not classified—				
Principal expenses:					Above ground.....	545	193	340	12
Salaries and wages—					Below ground.....	4			4
Officers.....	\$156,066	\$70,751	\$31,215	\$4,100	Wage earners employed in mills and beneficiating plants—				
Superintendents and managers.....	\$86,492	\$52,536	\$28,145	\$5,811	Above ground.....	359	316		43
Technical employees.....	\$0,500	\$3,700	\$5,800		Mineral land operated.....acres..	5,228	2,384	660	1,149
Clerks, etc.....	\$72,844	\$45,557	\$20,245	\$3,742	Land controlled, total.....acres..	6,354	3,900	690	1,704
Wage earners.....	\$2,068,844	\$1,237,898	\$719,596	\$111,360	Minerals land owned.....	4,701	3,262	585	914
Supplies and materials.....	\$484,249	\$237,897	\$226,244	\$27,108	Mineral land leased.....	522	122	165	235
Fuel.....	\$186,694	\$110,504	\$65,117	\$11,073	Timber and other lands owned and leased.....	1,131	576		555
Power.....	\$76,651	\$26,215	\$40,849	\$9,587	Power used: Aggregate horsepower.....	12,498	6,580	4,721	1,197
Royalties and rents.....	\$59,067	\$12,450	\$44,183	\$2,434	Prime-movers (horsepower, total)....	7,736	4,737	2,165	834
Taxes.....	\$83,009	\$43,204	\$30,822	\$3,983	Steam engines—				
Contract work.....	\$11,186	\$4,136		\$7,050	Number.....	194	149	31	14
Expenditures for development (included in the above items).....	\$23,813	\$6,441	\$10,750	\$6,622	Horsepower.....	7,406	4,707	2,165	534
Value of products.....	\$4,175,699	\$2,408,165	\$1,548,611	\$221,923	Internal-combustion engines—				
Persons engaged in industry.....	1,910	1,167	601	142	Number.....	3	2		1
Proprietors and firm members (total).....	50	42	4	4	Horsepower.....	45	30		15
Number performing manual labor.....	10	10			Water wheels and turbines—				
Salaries officers.....	43		16	4	Number.....	2			2
Superintendents and managers.....	40	22	13	5	Horsepower.....	285			285
Technical employees.....	7	4	3		Purchased power (horsepower, total).....	4,762	1,843	2,556	363
Clerks, etc.....	65	42	18	6	Electric motors operated by purchased current—				
Wage earners (average number).....	1,704	1,034	547	123	Number.....	101	49	39	13
Wage earners by occupation (Dec. 15):					Horsepower.....	4,757	1,838	2,556	363
Above ground (total).....	1,880	1,181	586	113	Other equipment operated by purchased power—				
Below ground (total).....	21			21	Horsepower.....	5	5		
Foremen, shift bosses, etc.—					Electric motors run by current generated by enterprise using:				
Above ground.....	76	52	17	7	Number.....	1		1	
Below ground.....	2			2	Horsepower.....	10		10	
Enginemen, hoistmen, electricians, mechanics, etc.—					Fuel used:				
Above ground.....	204	133	57	14	Coal, anthracite, tons, 2,940 pounds..	60	37	32	
Miners, quarrymen, and, drillmen, including their helpers—					Coal, bituminous, tons, 2,000 pounds..	22,871	14,902	6,710	1,559
Above ground.....	570	387	148	35	Coke..... tons, 2,060 pounds..	80	50		
Below ground.....	13			18	Wood..... cords.....	290	190		100
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—					Fuel oils..... barrels.....	29	5	24	
Above ground.....	126	100	24	2	Gasoline and other volatile oils..... barrels..	57	80		1
Below ground.....	2			2					

<sup>1</sup> Includes enterprises as follows: Clay, 1; fuller's earth, 1; iron ore, 1; limestone, 1; marble, 3; sandstone, 1; silica, 2; talc and soapstone, 1.  
<sup>2</sup> Includes 1 wage earner under 16 years of age.



## MICHIGAN.

Michigan, which ranks twenty-second among the states in size (land area 57,480 square miles) and seventh in population (3,668,412 in 1920), ranked ninth in value of mineral products in 1919. The state ranked eighth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total value of products of the mining enterprises in 1919 amounted to \$103,870,089, which was an increase of 53.4 per cent as compared with the corresponding amount reported at the census of 1909. This increase and the increases in capital, wages, cost of supplies and materials and fuel and power, shown in Table 1, are largely due to general price increases during the census interval and not in contradiction to the decreases in the number of individual mines and quarries and wells operated and average number of wage earners employed in mining. It is difficult to gauge the change in the mining industries as a whole, for the reason that there has been considerable increase in the production of iron ore and limestone and decrease in the amount of coal and copper produced.

The mining industries reported in Michigan in 1919, classified by principal products and listed in order of value of products, were iron ore, copper, bituminous coal, limestone, gypsum, sandstone, basalt, clay, marble, and petroleum and natural gas. The production of salt was an important mineral industry in Michigan in 1919, but was not included in the census of mines and quarries. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mining industry in Michigan in 1919 was the production of iron ore. Sixty-five out of a total of 122 mining enterprises in the state were engaged in this industry, employed 51.6 per cent of the total number of wage earners, and reported \$60,906,692 as value of products, or 58.6 per cent of the total value of products of the state. This amount includes, in addition to the value of iron ore, the value of manganese ore produced as a by-product. The iron-ore mining districts from which production was reported were in Dickinson, Gogebic, Iron, and Marquette Counties. Michigan was second only to Minnesota in the production of iron ore in 1919.

The mining industry second in importance in Michigan was copper, which was reported from Houghton, Keweenaw, and Ontonagon Counties. This industry employed 39.1 per cent of the average number of wage earners and reported products valued at \$34,476,336, or 33.2 per cent of the total value of

products. This amount includes receipts for custom milling and for power sold or for work or miscellaneous services for other enterprises. Michigan ranked second among the states in the total value of products of enterprises in the copper-mining industry.

The bituminous coal-mining industry in Michigan was third in importance among the mining industries of the state. It employed 5.3 per cent of the total number of wage earners and reported products valued at \$3,861,874, or 3.7 per cent of the total value of mineral products. Michigan coal-mining operations are in a basin in the south central portion of the state. Production was reported from Bay, Saginaw, Tuscola, and Calhoun Counties.

In addition to the operation of producing enterprises, mining on nonproducing properties for purposes of development was reported by six enterprises in 1919, three in the iron-ore industry and three in the copper industry. These operations were small, less than 1 per cent of the aggregate for the state, measured either by the number of wage earners employed or by expenditures reported.

The character of organizations conducting mining enterprises is brought out in Table 3, which shows that corporations operated 93.4 per cent of the total number of enterprises, employed 99.8 per cent of the average number of wage earners, and reported products valued at \$103,723,550, or 99.9 per cent of the total. Table 3 also shows that all copper-mining and all coal-mining enterprises were corporations. Similar statistics can not be given for the iron-ore industry without disclosure of statistics relating to minor operations by two individuals; all other iron-ore enterprises were conducted by corporations.

The proportion of small enterprises to large enterprises, as measured by average number of wage earners employed, is shown in Table 4. Forty-five and one-tenth per cent of the total number of mining enterprises in Michigan were in classes having no wage earners or fewer than 101 and the wage earners employed were only 7 per cent of the total number of wage earners. Fifty-five per cent of the total number of enterprises had more than 100 wage earners each, and these enterprises employed 93 per cent of the total number of wage earners. The largest enterprises—that is, those employing more than 500 wage earners—three in the iron-ore industry, eight in the copper-mining industry, and one in the coal-mining industry, employed 13,844 wage earners, or 44.2 per cent of the total number in all industries.

Table 5 shows that in three-fourths of the enterprises employing wage earners and for nearly three-

fourths of the wage earners employed the hours of labor were 44 to 53 per week and that in all other enterprises and for about one-fourth of the wage earners the hours of labor were 54 to 62 per week. In the iron-ore, copper, and coal-mining industries the 8-hour day and 6-day week prevailed, but in the iron-ore-mining industry the 9-hour and 10-hour day ruled for a considerable number of wage earners. In the quarrying industries the 10-hour day was the rule.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The minimum shown in November for the coal industry was very abnormal and due to the great strike.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	122	83	.....	Capital.....	\$283,528,270	\$119,331,967	137.6
Number of mines and quarries.....	165	173	-4.6	Principal expenses:			
Number of petroleum and natural-gas wells.....	19	21	.....	Salaries.....	4,311,559	2,173,522	98.4
Persons engaged.....	33,202	40,905	-18.8	Wages.....	50,406,187	27,060,908	82.2
Proprietors and firm members, total.....	19	118	-83.9	Contract work.....	29,439	470,205	-93.7
Number performing manual labor in or about the mines, quarries, and wells.....	6	75	.....	Supplies and materials.....	15,204,063	9,800,415	55.1
Salaried employees.....	1,891	1,618	16.9	Fuel and power.....	8,444,697	4,193,347	101.4
Wage earners (average number).....	31,202	30,109	-20.1	Royalties and rents.....	6,066,923	4,048,006	64.7
Power used (horsepower).....	237,882	278,861	23.4	Taxes.....	6,275,133	1,948,756	222.0
				Value of products.....	103,870,089	67,714,479	53.4

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	122	31,202	100.0	\$103,870,089	100.0	Copper.....	22	12,235	30.1	\$34,476,336	33.2
Iron ore.....	65	16,160	51.6	60,906,692	58.6	Coal, bituminous.....	11	1,654	5.3	3,861,874	3.7
						All other industries <sup>1</sup> .....	24	1,243	4.0	4,635,187	4.5

<sup>1</sup> Includes enterprises in industries as follows: Basalt, 1; clay, 4; gypsum, 4; limestone, 11; marble, 1; petroleum and natural gas, 1; sandstone, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	122	31,202	\$103,870,089	\$851,304	100.0	100.0	100.0
Corporation.....	114	31,236	103,723,550	909,856	93.4	99.8	99.9
Individual.....	6	51	132,642	26,528	4.1	0.2	0.1
Firm.....	3	5	13,897	4,632	2.5	( <sup>1</sup> )	( <sup>1</sup> )
COPPER.....	22	12,235	34,476,336	1,567,106	100.0	100.0	100.0
Corporation.....	22	12,235	34,476,336	1,567,106	100.0	100.0	100.0
COAL, BITUMINOUS.....	11	1,654	3,861,874	351,079	100.0	100.0	100.0
Corporation.....	11	1,654	3,861,874	351,079	100.0	100.0	100.0

<sup>1</sup> Less than one-tenth of 1 per cent.

## MINES AND QUARRIES—MICHIGAN.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	122	100.0	31,292	100.0	COPPER.....	22	100.0	12,235	100.0
No wage earners.....	1	0.8			21 to 50.....	3	13.6	112	0.9
1 to 5.....	9	7.4	23	0.1	51 to 100.....	3	13.6	224	1.8
6 to 20.....	9	7.4	116	0.4	101 to 500.....	8	36.4	1,787	14.6
21 to 50.....	16	13.1	546	1.7	501 to 1,000.....	5	22.7	3,494	28.6
51 to 100.....	20	16.4	1,492	4.8	Over 1,000.....	3	13.6	6,618	54.1
101 to 500.....	55	45.1	15,271	48.8	COAL, BITUMINOUS.....	11	100.0	1,654	100.0
501 to 1,000.....	9	7.4	7,226	23.1	6 to 20.....	2	18.2	21	1.3
Over 1,000.....	3	2.5	6,618	21.1	51 to 100.....	2	18.2	188	11.4
IRON ORE.....	65	100.0	16,160	100.0	101 to 500.....	6	54.5	784	47.4
1 to 5.....	1	1.5	5	( <sup>1</sup> )	501 to 1,000.....	1	9.1	661	40.0
6 to 20.....	3	4.6	40	0.2					
21 to 50.....	8	12.3	275	1.7					
51 to 100.....	13	20.0	963	6.0					
101 to 500.....	37	56.9	11,806	73.1					
501 to 1,000.....	3	4.6	3,071	19.0					

<sup>1</sup> Less than one-tenth of 1 per cent.

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—				INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—			
	Enter-prises.	Wage earn-ers.	44 to 53.		54 to 62.			Enter-prises.	Wage earn-ers.	44 to 53.		54 to 62.	
			Enter-prises.	Wage earn-ers.	Enter-prises.	Wage earn-ers.				Enter-prises.	Wage earn-ers.	Enter-prises.	Wage earn-ers.
All industries.....	121	31,292	91	23,341	30	7,951	Copper.....	22	12,235	22	12,235	.....	.....
Iron ore.....	65	16,160	55	9,286	10	6,874	Coal, bituminous.....	11	1,654	11	1,654	.....	.....
							All other industries.....	23	1,243	3	166	20	1,077

<sup>1</sup> Exclusive of 1 enterprise in the sandstone industry employing no wage earners.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		Janu-ary.	Febru-ary.	March.	April.	May.	June.	July.	Aug-ust.	Sep-tember.	Octo-ber.	Novem-ber.	Decem-ber.	
All industries.....	31,537	34,703	<b>34,963</b>	34,635	30,884	30,019	<i>29,013</i>	29,864	30,585	31,629	32,043	29,442	30,665	83.0
Producing enterprises.....	31,292	34,436	<b>34,729</b>	34,420	30,655	29,705	<i>28,636</i>	29,599	30,303	31,365	31,780	29,202	30,414	83.0
Iron ore.....	16,160	16,584	<b>16,527</b>	16,670	15,927	15,999	15,710	16,115	16,096	16,472	16,464	15,774	16,539	93.5
Copper.....	12,235	15,038	<b>15,177</b>	14,856	12,934	10,688	<i>10,040</i>	10,187	10,923	11,445	11,820	11,879	11,833	66.2
Coal, bituminous.....	1,654	2,047	<b>2,228</b>	2,065	533	1,586	1,617	1,801	1,785	1,937	2,049	<i>176</i>	1,996	7.9
All other industries.....	1,243	767	<b>789</b>	809	1,261	1,492	1,469	1,496	1,499	1,511	1,447	1,373	1,003	50.8
Nonproducing enterprises.....	245	267	233	215	229	254	177	265	<b>282</b>	264	263	240	251	62.8

MINES AND QUARRIES—MICHIGAN.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.					Non-producing enterprises. <sup>3</sup>
		Total.	Iron ore.	Copper. <sup>1</sup>	Coal, bituminous.	All other. <sup>2</sup>	
Number of enterprises.....	128	122	65	22	11	24	6
Number of mines and quarries.....	171	165	100	28	14	23	6
Number of petroleum and natural-gas wells.....	19	19				19	
Capital.....	\$290,334,808	\$283,528,279	\$116,799,825	\$147,798,096	\$6,037,645	\$12,904,713	\$6,806,539
Principal expenses:							
Salaries and wages—							
Officers.....	\$539,390	\$534,307	\$246,190	\$177,196	\$44,739	\$66,182	\$5,083
Superintendents and managers.....	\$1,389,345	\$1,369,921	\$686,133	\$516,062	\$96,918	\$71,806	\$19,424
Technical employees.....	\$877,713	\$871,746	\$448,086	\$198,180	\$10,660	\$14,811	\$5,987
Clerks, etc.....	\$1,550,282	\$1,535,585	\$800,807	\$648,667	\$54,777	\$131,434	\$14,697
Wage earners.....	\$50,750,490	\$50,406,187	\$32,186,404	\$14,608,804	\$1,087,782	\$1,628,247	\$344,308
Supplies and materials.....	\$15,496,561	\$15,204,083	\$7,845,035	\$5,612,077	\$664,557	\$1,082,394	\$292,498
Fuel.....	\$7,500,221	\$7,455,307	\$2,669,298	\$4,146,775	\$264,876	\$374,328	\$45,014
Power.....	\$1,006,180	\$989,490	\$769,457	\$114,048	\$36,701	\$69,284	\$15,670
Royalties and rents.....	\$6,693,314	\$6,668,928	\$6,598,826	\$6,598,826	\$49,940	\$20,158	\$24,391
Taxes.....	\$6,307,184	\$6,275,133	\$3,785,506	\$2,328,088	\$29,878	\$131,683	\$32,051
Contract work.....	\$34,786	\$29,489	\$29,489			\$5,899	\$6,347
Expenditures for development (included in the above items).....	\$3,316,407	\$2,667,899	\$1,912,393	\$559,630	\$143,023	\$42,853	\$658,598
Value of products.....	\$108,870,089	\$108,870,089	\$60,906,062	\$34,476,336	\$3,861,874	\$4,625,187	
Persons engaged in industry.....	83,472	83,202	17,160	12,917	1,744	1,372	270
Proprietors and firm members (total).....	19	19	2			6	
Number performing manual labor.....	6	6					
Salaried officers.....	123	121	40	56	13	12	2
Superintendents and managers.....	335	329	185	133	32	29	6
Technical employees.....	333	329	235	82	8	4	4
Clerks, etc.....	1,075	1,082	547	411	37	67	13
Wage earners (average number).....	31,537	31,292	16,160	12,235	1,654	1,243	245
Wage earners, by occupation (Dec. 15):							
Above ground (total).....	11,996	11,894	4,760	5,400	304	1,430	102
Below ground (total).....	20,722	20,576	11,591	7,036	1,837	1,111	147
Foremen, shift bosses, etc.—							
Above ground.....	394	391	157	154	25	55	3
Below ground.....	657	647	323	298	22	4	10
Enginemen, hoistmen, electricians, mechanics, etc.—							
Above ground.....	4,409	4,357	1,916	1,990	125	336	82
Below ground.....	658	653	399	182	67	5	5
Miners, quarrymen, and drillmen, including their helpers—							
Above ground.....	10,440	10,512	117		10	385	
Below ground.....	512	512				47	44
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—							
Above ground.....	596	587	469	6	24	88	9
Below ground.....	5,867	5,773	2,699	2,710	345	19	84
Muckers, loaders, laborers, and others not classified—							
Above ground.....	3,826	3,798	2,006	1,108	130	432	38
Below ground.....	3,110	3,106	1,120	1,842	108	36	4
Wage earners employed in mills and beneficiating plants—							
Above ground.....	2,259	2,259	33	2,082		144	
Number of females included in wage earners reported above—							
Above ground.....	58	58	4	49		5	
Number of wage earners under 16 years of age included in those reported above—							
Above ground.....	2	2		2			
Mineral and oil land operated..... acres.....	120,045	114,366	20,026	66,631	9,160	18,631	5,689
Land controlled, total..... acres.....	551,076	545,255	252,949	262,865	10,529	18,912	5,821
Mineral and oil land owned.....	95,862	90,683	4,775	65,655	1,921	18,332	5,179
Mineral and oil land leased.....	24,369	23,799	15,376	876	7,248	299	510
Timber and other lands owned and leased.....	430,905	430,773	232,798	196,334	1,360	281	132
Power used: Aggregate horsepower.....	340,842	337,882	142,559	109,589	6,884	18,850	2,960
Prime movers (horsepower, total).....	275,064	274,064	94,778	161,353	6,189	11,764	980
Steam engines—							
Number.....	1,066	1,062	655	326	49	52	4
Horsepower.....	209,447	208,797	69,497	127,951	6,114	5,226	680
Steam turbines—							
Number.....	30	28	13	11	1	3	2
Horsepower.....	57,100	56,770	17,132	33,230	75	6,333	330
Internal-combustion engines—							
Number.....	15	15	4	4		7	
Horsepower.....	417	417	49	162		206	
Water wheels and turbines—							
Number.....	16	16	16				
Horsepower.....	8,100	8,100	8,100				
Purchased power (horsepower, total).....	65,778	63,798	47,781	8,236	696	7,066	1,980
Electric motors operated by purchased current—							
Number.....	1,008	976	597	261	10	198	30
Horsepower.....	65,778	63,798	47,781	8,236	696	7,066	1,980
Electric motors run by current generated by enterprise using:							
Number.....	1,663	1,663	504	888	179	92	
Horsepower.....	107,750	107,750	40,572	56,088	5,285	5,906	
Fuel used:							
Coal, anthracite..... tons, 2,240 pounds.....	13,891	13,591	1,332	14,809		2,750	
Coal, bituminous..... tons, 2,000 pounds.....	1,877,369	1,871,023	431,760	782,742	69,824	72,697	6,346
Coke..... tons, 2,000 pounds.....	4,017	4,013	255	2,758		1,000	4
Fuel oils..... barrels.....	2,826	2,826	310	2,476		40	
Gasoline and other volatile oils..... barrels.....	1,627	1,570	253	1,066		261	57
Natural gas..... 1,000 cubic feet.....	33,781	33,781		33,456		325	

<sup>1</sup> Includes 1 reduction mill operated independently of mines.

<sup>2</sup> Includes enterprises as follows: Basalt, 1; clay, 4; gypsum, 4; limestone, 11; marble, 1; petroleum and natural gas, 1; sandstone, 2.

<sup>3</sup> Includes enterprises as follows: Copper, 3; iron ore, 3.

## MINNESOTA.

Minnesota, which ranks eleventh among the states in size (land area 80,858 square miles) and seventeenth in population (2,387,125 in 1920), ranked eighth in value of mineral products in 1919. The state ranked thirteenth in the total number of persons engaged in the mining industries and twelfth in the average number of wage earners employed.

The total value of mineral products for the state in 1919 was \$130,399,254, an increase of 122.3 per cent over the value reported at the census of 1909. This increase and the increases in capital, wages, cost of supplies and materials and fuel and power, shown in Table 1, are largely due to general price increases during the census interval and therefore may not be used properly to measure the growth of mining. The large increase in taxes is due to special taxes imposed by the state on iron-ore lands and mining and also to Federal income tax added since 1909. The slight increase in the number of wage earners employed, in the face of the temporarily adverse industrial conditions in 1919, is indicative of progress in the mining industries.

The mining industries reported for 1919, classified by principal products and listed in order of value of products, were iron ore, granite, manganese ore, limestone, abrasive materials, clay, and sandstone. The industries for which statistics can be shown without disclosure of individual operations are ranked according to value of products in Table 2.

The principal mining industry in Minnesota was the mining of iron ore, in which Minnesota leads all other states. The industry third in importance in the state, herein designated as the mining of manganese ores, is virtually a part of the iron-ore mining industry as its products are, strictly speaking, manganiferous iron ores obtained by the same methods and in the same localities as are the iron ores proper. The enterprises mining iron and manganiferous ores in Minnesota in 1919 included 95 out of a total of 135 enterprises, employed 96 per cent of the total number of wage earners, and reported products valued at \$128,780,284, or 98.8 per cent of the total value of mineral products of the state. These industries are located in St. Louis, Itasca, and Crow Wing Counties.

Granite quarrying ranked second among the mineral industries in Minnesota in 1919. Although small in comparison with iron-ore mining, the granite industry in the St. Cloud region in Stearns and Sherburne Counties is nevertheless important, supplying stone which is widely used for building and paving.

In addition to the operation of the producing mines and quarries, some mining work was done in

Minnesota on mineral properties which were not productive in 1919; ten such enterprises in the iron-ore mining industry were reported. These enterprises, with a combined capital of \$6,427,966, employed 275 wage earners and expended \$1,583,584 for development. The number of wage earners employed and the expenditures for development represented 1.6 per cent of the aggregate number of wage earners and the aggregate expenditures reported for all mining operations in the state.

The character of organizations conducting mining enterprises in Minnesota in 1919 is brought out in Table 3, which shows that corporations were most important not only as to number of enterprises operated, but also as to total number of wage earners employed and total value of products reported. Practically all iron-ore and manganese enterprises were controlled by corporations. Only two enterprises reported other forms of ownership and their operations were small as compared with those conducted by corporations.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Minnesota, 73.3 per cent had no wage earners or fewer than 101 each and the wage earners employed were only 19.8 per cent of the total number of wage earners. On the other hand, only 26.7 per cent of the total number of enterprises had more than 100 wage earners each and employed 80.2 per cent of the total number of wage earners. The larger enterprises were in the iron-ore and manganese-mining industries.

Table 5 shows that in a majority of enterprises but for only 33.6 per cent of the wage earners the prevailing hours of labor were 44 to 53 per week. In about one-third of the enterprises, employing 63.9 per cent of the total number of wage earners, the hours of labor were 54 to 62 per week. In the principal industry, iron-ore mining, the 8-hour day and 6-day week was reported by a majority of the enterprises but for less than one-third of the wage earners. Thirty-three out of 88 enterprises in this industry, employing 65.3 per cent of the total number of wage earners in the industry, reported hours of labor ranging from 54 to 62 per week. In most of these enterprises the 10-hour day and 6-day week prevailed. In the quarry industry the 8-hour day and 6-day week was the rule.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries

during the census year. The normal seasonal control of iron mining in Minnesota is indicated by the figures in this table.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	135	153	-11.8	Capital.....	\$310,095,559	\$176,950,399	75.2
Number of mines and quarries.....	196	250	-2.2	Principal expenses:			
Persons engaged.....	18,562	18,068	2.7	Salaries.....	3,048,421	1,568,740	94.3
Proprietors and firm members, total.....	40	169	-76.3	Wages.....	29,383,021	11,907,049	146.8
Number performing manual labor in or about the mines and quarries.....	19	99		Contract work.....	1,512,999	2,157,108	-29.9
Salaried employees.....	1,257	1,313	-4.3	Supplies and materials.....	14,101,992	6,736,806	108.3
Wage earners (average number).....	17,265	16,586	4.1	Fuel and power.....	4,681,962	2,024,606	131.3
Power used (horsepower).....	144,199	151,834	-5.0	Royalties and rents.....	17,642,811	10,731,959	64.4
				Taxes.....	26,074,651	2,824,161	823.3
				Value of products.....	130,399,254	58,664,852	122.3

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	135	17,265	100.0	\$130,399,254	100.0	Manganese.....	6	347	2.0	\$403,110	0.3
Iron ore.....	89	16,236	94.0	128,377,174	98.4	Limestone.....	10	156	0.9	311,180	0.2
Granite.....	27	392	2.3	1,185,391	0.9	All other industries <sup>1</sup> .....	3	134	0.8	172,399	0.1

<sup>1</sup> Includes enterprises in industries as follows: Abrasive materials, 1; clay, 1; sandstone, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, PRODUCING ENTERPRISES: 1919.

CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
All industries.....	135	17,265	\$130,399,254	\$965,930	100.0	100.0	100.0
Corporation.....	112	16,894	129,539,822	1,157,082	83.0	97.8	99.4
Individual.....	12	157	265,400	22,117	8.9	0.9	0.2
Firm.....	11	224	544,062	49,457	8.1	1.3	0.4

## MINES AND QUARRIES—MINNESOTA.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	135	100.0	17,265	100.0	GRANITE.....	27	100.0	392	100.0
No wage earners.....	2	1.5			No wage earners.....	1	3.7		
1 to 5.....	14	10.4	38	0.2	1 to 5.....	9	33.3	24	6.1
6 to 20.....	28	19.2	307	1.8	6 to 20.....	9	33.3	77	19.6
21 to 50.....	23	19.2	912	5.3	21 to 50.....	6	22.2	157	40.1
51 to 100.....	31	23.0	2,155	12.5	51 to 100.....	2	7.4	134	34.2
101 to 500.....	36	26.7	13,853	80.2	MANGANESE.....	6	100.0	347	100.0
IRON ORE.....	89	100.0	16,236	100.0	6 to 20.....	2	33.3	31	8.9
No wage earners.....	1	1.1			21 to 50.....	3	60.0	90	25.9
1 to 5.....	1	1.1	4	( <sup>1</sup> )	101 to 500.....	1	16.7	226	65.1
6 to 20.....	11	12.4	154	0.9	LIMESTONE.....	10	100.0	156	100.0
21 to 50.....	15	16.9	617	3.8	1 to 5.....	4	40.0	10	6.4
51 to 100.....	26	29.2	1,834	11.3	6 to 20.....	3	30.0	36	23.1
101 to 500.....	35	39.3	13,627	83.9	21 to 50.....	2	20.0	48	30.8
					51 to 100.....	1	10.0	62	39.7

<sup>1</sup> Less than one-tenth of 1 per cent.

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	133	17,265	2	25	1	8	81	5,793	45	11,030	4	409
Iron ore.....	88	16,236	1	11	1	8	50	5,240	33	10,568	3	379
Granite.....	26	302					23	346	2	16	1	30
Manganese.....	6	347	1	14			3	68	2	265		
Limestone.....	10	156					4	74	6	82		
All other.....	3	134					1	65	2	69		

<sup>1</sup> Exclusive of 2 enterprises employing no wage earners in the following industries: Granite, 1; iron ore, 1.

TABLE 6.—WAGE EARNERS BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	17,540	16,496	16,650	16,285	17,346	18,969	18,883	<b>19,079</b>	18,960	18,398	17,516	16,563	<i>16,336</i>	80.4
Producing enterprises.....	17,265	16,033	16,364	16,010	17,054	18,643	18,587	<b>18,804</b>	18,667	18,178	17,348	16,383	<i>16,109</i>	80.3
Iron ore.....	16,236	14,961	15,252	15,132	16,088	17,716	17,605	<b>17,783</b>	17,574	17,069	16,225	15,338	<i>14,119</i>	79.5
Granite.....	392	333	353	351	351	378	387	413	413	422	437	444	422	75.0
Manganese.....	347	529	545	291	302	233	265	306	362	359	359	307	297	41.8
Limestone.....	156	58	53	105	159	190	198	203	201	185	166	166	143	24.0
All other industries.....	134	158	151	131	154	127	115	134	115	127	142	128	128	71.5
Nonproducing enterprises—iron ore.....	275	463	286	275	292	326	296	275	298	220	168	180	226	36.3

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TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.						NONPRO- DUCING EN- TERPRISES.
		Total.	Iron ore.	Granite.	Manganese.	Limestone.	All other. <sup>1</sup>	
Number of enterprises.....	145	135	89	27	6	10	3	10
Number of mines and quarries.....	206	196	141	34	8	10	3	10
Capital.....	\$316,523,525	\$310,095,559	\$304,386,006	\$771,598	\$4,066,854	\$497,618	\$373,495	\$6,427,966
Principal expenses:								
Salaries and wages—								
Officers.....	\$404,998	\$395,013	\$366,367	\$16,896	\$5,350	\$6,500	.....	\$9,985
Superintendents and managers.....	\$865,518	\$851,248	\$818,540	\$6,850	\$13,247	\$7,478	\$6,133	\$14,370
Technical employees.....	\$496,743	\$461,518	\$452,857	\$7,124	\$1,537	.....	.....	\$5,225
Clerks, etc.....	\$1,353,043	\$1,340,642	\$1,313,303	\$10,050	\$11,992	\$5,397	.....	\$12,401
Wage earners.....	\$29,835,092	\$29,833,021	\$28,333,475	\$477,028	\$279,735	\$158,065	\$134,118	\$462,071
Supplies and materials.....	\$14,442,274	\$14,101,962	\$13,870,897	\$96,962	\$86,275	\$27,642	\$18,196	\$340,312
Fuel.....	\$4,233,367	\$4,155,158	\$4,069,393	\$55,475	\$22,898	\$11,747	\$5,745	\$78,209
Power.....	\$553,822	\$526,794	\$455,323	\$33,074	\$27,616	\$9,267	\$1,514	\$27,028
Royalties and rents.....	\$17,746,402	\$17,642,811	\$17,532,080	\$4,371	\$88,401	\$9,906	\$8,103	\$103,591
Taxes.....	\$26,382,843	\$26,074,651	\$26,013,068	\$17,865	\$34,964	\$3,069	\$667	\$308,192
Contract work.....	\$2,193,794	\$1,512,999	\$1,444,266	\$2,136	\$43,315	\$23,292	.....	\$675,796
Expenditures for development (included in the above items).....	\$11,537,254	\$9,953,680	\$9,812,648	\$15,735	\$121,973	\$3,324	.....	\$1,583,584
Value of products.....	\$130,399,254	\$130,399,254	\$128,377,174	\$1,135,391	\$403,110	\$311,180	\$172,399	.....
Persons engaged in industry.....	18,864	18,562	17,422	445	378	176	141	302
Proprietors and firm members (total).....	40	40	2	25	1	8	4	.....
Number performing manual labor.....	19	19	.....	18	.....	1	.....	.....
Salaries officers.....	69	63	50	7	4	2	.....	6
Superintendents and managers.....	259	253	232	4	9	5	3	6
Technical employees.....	190	187	179	5	3	.....	.....	3
Clerks, etc.....	765	754	723	12	14	5	.....	12
Wage earners (average number).....	17,540	17,265	16,236	392	347	155	134	275
Wage earners by occupation (Dec. 15):								
Above ground (total).....	9,612	9,342	8,350	436	213	201	142	270
Below ground (total).....	9,312	9,258	8,777	.....	476	.....	.....	59
Foreman, shift bosses, etc.—								
Above ground.....	449	434	400	19	5	7	3	15
Below ground.....	275	269	249	.....	20	.....	.....	6
Enginemen, holstmen, electricians, mechanics, etc.—								
Above ground.....	3,340	3,267	3,165	25	50	21	6	73
Below ground.....	268	257	253	.....	4	.....	.....	11
Miners, quarrymen, and drillmen, including their helpers—								
Above ground.....	1,040	1,010	552	313	.....	112	33	30
Below ground.....	5,370	5,362	4,974	.....	388	.....	.....	8
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—								
Above ground.....	809	775	742	5	28	.....	.....	34
Below ground.....	1,614	1,498	1,431	.....	62	.....	.....	21
Muckers, loaders, laborers, and others not classified—								
Above ground.....	3,453	3,335	3,052	16	130	37	100	118
Below ground.....	1,885	1,872	1,870	.....	2	.....	.....	13
Wage earners employed in mills and beneficiating plants—								
Above ground.....	521	521	439	58	.....	24	.....	.....
Mineral land operated..... acres.....	26,128	24,536	21,971	1,074	970	371	450	1,292
Land controlled, total..... acres.....	287,073	285,541	282,598	1,162	970	371	450	1,532
Mineral land owned.....	5,899	5,899	4,073	1,027	.....	359	440	.....
Mineral land leased.....	21,166	19,574	18,535	47	970	12	10	1,292
Timber and other lands owned and leased.....	260,008	259,768	259,090	78	.....	.....	.....	240
Power used: Aggregate horsepower.....	149,015	144,190	136,924	3,675	2,554	1,594	452	3,816
Prime movers (horsepower, total).....	116,229	114,354	110,831	1,770	796	606	352	1,875
Steam engines—								
Number.....	1,315	1,293	1,212	48	14	14	5	22
Horsepower.....	113,374	111,508	109,430	1,620	609	599	260	1,856
Steam turbines—								
Number.....	4	4	4	.....	.....	.....	.....	.....
Horsepower.....	1,629	1,629	1,629	.....	.....	.....	.....	.....
Internal-combustion engines—								
Number.....	37	36	18	5	.....	1	7	1
Horsepower.....	1,226	1,217	772	180	187	6	102	9
Purchased power (horsepower, total).....	31,786	29,845	28,093	1,905	1,758	969	100	1,941
Electric motors operated by purchased current—								
Number.....	603	578	462	42	39	33	2	25
Horsepower.....	31,786	29,845	28,093	1,905	1,758	969	100	1,941
Electric motors run by current generated by enterprise using:								
Number.....	436	436	436	.....	.....	.....	.....	.....
Horsepower.....	13,563	13,563	13,563	.....	.....	.....	.....	.....
Fuel used:								
Coal, anthracite..... tons, 2,240 pounds.....	3,248	3,248	3,248	.....	.....	.....	.....	.....
Coal, bituminous..... tons, 2,000 pounds.....	738,750	726,392	714,873	6,315	2,836	1,578	790	12,358
Coke..... tons, 2,000 pounds.....	758	758	758	.....	.....	.....	.....	.....
Wood..... cords.....	477	477	322	125	.....	30	.....	.....
Fuel oils..... barrels.....	1,230	1,230	1,300	.....	30	.....	.....	.....
Gasoline and other volatile oils..... barrels.....	2,716	2,666	2,223	266	20	7	150	50

<sup>1</sup> Includes enterprises as follows: Abrasive materials, 1; clay, 1; sandstone, 1.

<sup>2</sup> Includes 3 females and 2 wage earners under 16 years of age.

<sup>3</sup> Includes 2 females and 2 wage earners under 16 years of age.

<sup>4</sup> Includes 1 female.



## MISSOURI.

Missouri, which ranks eighteenth in size among the states (land area 68,727 square miles) and ninth in population (3,404,055 in 1920), ranked twentieth in value of mineral products for 1919. The state ranked seventeenth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross amount received for products by operators of all mines and quarries in 1919 was \$33,365,694, which was an increase of 5.4 per cent over the corresponding amount for 1909. There are included in the gross receipts for products duplications in the value of lead and zinc ores and concentrates, marketed by some operators and used as material by others who included the value of the purchased material in the value of products reported by them. Deducting these duplications, \$669 for 1919 and \$1,471,553 for 1909, leaves the net values of products \$33,365,025 and \$30,195,972, respectively, or an increase of 10.5 per cent in 1919 as compared with 1909. The value of products reported for 1919 includes \$19,599 received for mineral by-products; \$10,995 for other products not specified; \$1,766 for custom milling; and \$19,820 for power sold and for work or miscellaneous services for other enterprises.

The statistics for 1919 are not wholly comparable with those reported at the census of 1909, for the reason that those for the lead and zinc industry for 1909 include the operation of smelters connected with mining operations. Smelter statistics for 1919 were not collected for the census of mines and quarries. By reason of the difference in the scope of the censuses, the 1909 figures for value of products include approximately \$4,500,000 which have no counterpart in the value of products for 1919. The figures reported in 1909 for other items are affected by indeterminate but probably proportionate amounts. On this account the statistics shown in Table 1, should not be accepted as indicating correctly the change in the mining industries in Missouri. The increase in taxes shown in this table is accounted for by addition of Federal income taxes since 1909.

The mining industries reported for the state of Missouri in 1919, classified according to principal products and listed in order of value of products, were lead and zinc, bituminous coal, limestone, clay, barytes, copper, sandstone, iron ore, marble, granite, pyrite, and abrasive materials. In addition to products indicated by the industry designations, one lead and zinc enterprise produced barytes and two pro-

duced pyrite as a by-product; three barytes enterprises produced lead ore; two limestone enterprises produced marble; one marble enterprise produced limestone; and one coal mine produced sandstone. Industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mining industry in Missouri in 1919 was the production of lead and zinc. The statistics for this industry, here presented, include all operations connected with mining of crude ore and the treatment to which the ore is subjected at the mines, including the operation of hand jigs and reduction mills, and also the operations on dumps and old tailings and in custom or merchant mills whether connected with mines or not. Smelter operations are not included. Furthermore, the statistics are based on the reports of operators many of whom are sublessees and of whom there are sometimes a considerable number on a single mining property. The statistics, therefore, will differ as to number of enterprises and mines, value of products, and size and character of operating organizations from statistics based on reports from fee owners or primary lessees. As reported to the census, the lead and zinc mining industry in 1919 included 93 enterprises, reported 32.3 per cent of the total number of wage earners and \$15,879,177 as the gross value of products, or 47.6 per cent of the total value of products for the state. This value of products is based on the sales value of mine and mill products and not on value of the lead and zinc metal or oxide obtained from them. Missouri ranked second in the United States in the lead and zinc mining industry. Production was reported from Barry, Greene, Jasper, Lawrence, and Newton Counties in southwestern Missouri, and Franklin, Jefferson, and St. Francois in southeastern Missouri.

The industry second in importance on the basis of value of products, but first on basis of average number of wage earners, was the mining of bituminous coal. This industry embraced 179 out of a total of 468 enterprises, employed 49 per cent of the average number of wage earners, and reported products valued at \$12,077,845, or 36.2 per cent of the total value of products of the state. Coal production was reported from 27 counties in central, northern, and western parts of the state.

The only other mining industries in Missouri with products valued at over a million dollars in 1919 were limestone quarrying and clay mining. These two in-

dustries employed respectively 7.9 and 4.2 per cent of the average number of wage earners, and contributed products valued at \$2,355,736 and \$1,420,585.

Although small as compared with other industries in the state, the production of barytes was important and gave Missouri second rank in the United States in the production of this mineral. Seven counties reported, but the bulk of the production came from Washington County.

The character of organizations conducting mining enterprises in Missouri in 1919 is brought out in Table 3, which shows that somewhat less than half of the enterprises were conducted by corporations. Corporations, nevertheless, employed 86.8 per cent of the total number of wage earners and contributed 90.3 per cent of the total value of products. The table shows also that for each of the industries separately presented, except barytes, the corporations controlled as to wage earners employed and value of products reported, although they did not constitute a majority of the enterprises in every industry. The barytes industry was largely made up of small operations by individuals or firms; however, the largest share of wage earners and value of products is credited to corporations.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises employing wage earners, 89.8 per cent reported fewer than 101 wage earners each and

employed 46.5 per cent of the total number. On the other hand, only 24 enterprises, or 5.1 per cent of the total number, had more than 100 wage earners each and these enterprises employed more than half of the wage earners reported. In Table 4 all these larger enterprises are shown in the coal-mining and lead and zinc mining industries except one in the limestone-quarrying industry.

Table 5 shows that in a majority of enterprises, employing wage earners, and in 84.5 per cent of the total number of wage earners the hours of labor in the mining industries in Missouri in 1919 were 44 to 53 per week. In the principal industries, coal mining and lead and zinc mining, the 8-hour day and 6-day week prevailed. In the latter industry, however, some of the enterprises reported longer hours for wage earners employed in reduction mills and otherwise above ground.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The minimum shown for the coal industry in the month of November due to the great coal strike is extremely low, so much so that it makes an abnormal minimum in November for all industries combined.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

## MINES AND QUARRIES—MISSOURI.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	468	1,021	-54.2	Capital.....	\$47,926,350	\$60,549,081	-20.8
Number of mines and quarries.....	494	1,224	-59.6	Principal expenses:			
Number of petroleum and natural-gas wells.....		39		Salaries.....	1,863,624	1,274,920	46.2
Persons engaged.....	16,368	26,983	-39.3	Wages.....	16,777,353	14,893,570	16.6
Proprietors and firm members, total.....	497	1,783	-72.1	Contract work.....	415,843	162,084	156.6
Number performing manual labor in or about the mines, quarries, and wells.....	219	1,063	-79.4	Supplies and materials <sup>2</sup> .....	4,781,748	6,201,895	-22.9
Salaried employees.....	1,004	1,730	-42.0	Fuel and power.....	2,034,413	2,220,657	-8.4
Wage earners (average number).....	14,867	23,420	-36.6	Royalties and rents.....	780,604	1,954,092	-60.1
Power used (horsepower).....	100,160	109,672	-8.7	Taxes.....	2,071,467	158,086	1,210.3
				Value of products.....	33,365,694	31,667,525	5.4

<sup>1</sup> A minus sign (-) denotes decrease.<sup>2</sup> Includes cost of ore purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	468	14,857	100.0	\$33,365,694	100.0	Limestone.....	70	1,171	7.9	\$2,355,736	7.1
Lead and zinc.....	93	4,793	32.3	15,879,177	47.6	Clay.....	41	622	4.2	1,420,585	4.3
Coal, bituminous.....	179	7,285	49.0	12,077,845	36.2	Barytes.....	66	490	3.2	527,817	1.6
						All other industries.....	19	508	3.4	1,104,534	3.3

<sup>1</sup> Includes enterprises in industries as follows: Abrasive materials, 2; copper, 1; granite, 2; iron ore, 8; marble, 1; pyrite, 1; sandstone, 4.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	468	14,857	\$33,365,694	\$71,294	100.0	100.0	100.0
Corporation.....	216	12,897	30,145,891	139,564	46.2	86.8	90.3
Individual.....	133	990	1,526,576	11,478	28.4	6.7	4.6
Firm <sup>1</sup> .....	119	970	1,693,227	14,229	25.4	6.5	5.1
LEAD AND ZINC.....	93	4,793	15,879,177	170,744	100.0	100.0	100.0
Corporation.....	36	4,505	15,158,827	421,079	38.7	94.0	95.5
Individual.....	9	59	102,967	11,441	9.7	1.2	0.6
Firm.....	48	229	617,383	12,862	51.6	4.8	3.9
COAL, BITUMINOUS.....	179	7,285	12,077,845	67,474	100.0	100.0	100.0
Corporation.....	92	6,399	10,756,523	116,919	51.4	87.8	89.1
Individual.....	43	361	517,831	12,043	24.0	5.0	4.3
Firm <sup>1</sup> .....	44	525	803,491	18,261	24.6	7.2	6.7
LIMESTONE.....	70	1,171	2,355,736	33,653	100.0	100.0	100.0
Corporation.....	39	877	1,921,761	49,276	55.7	74.9	81.6
Individual.....	23	205	307,543	13,371	32.9	17.5	13.1
Firm.....	8	89	126,432	15,804	11.4	7.6	5.4
CLAY.....	41	622	1,420,585	34,648	100.0	100.0	100.0
Corporation.....	20	421	965,618	48,281	48.8	67.7	68.0
Individual.....	18	173	406,016	22,556	43.9	27.8	28.6
Firm.....	3	28	48,951	16,317	7.3	4.5	3.4
BARYTES.....	66	490	527,817	7,997	100.0	100.0	100.0
Corporation.....	12	196	242,496	20,208	18.2	40.8	25.9
Individual.....	40	192	192,219	4,805	60.6	40.0	36.4
Firm.....	14	92	93,102	6,650	21.2	19.2	17.6

<sup>1</sup> Includes 1 other form of organization.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES.....</b>	<b>468</b>	<b>100.0</b>	<b>14,857</b>	<b>100.0</b>	<b>LIMESTONE.....</b>	<b>70</b>	<b>100.0</b>	<b>1,171</b>	<b>100.0</b>
No wage earners.....	24	5.1			No wage earners.....	1	1.4		
1 to 5.....	156	33.3	405	2.7	1 to 5.....	20	28.6	60	5.1
6 to 20.....	152	32.5	1,793	12.1	6 to 20.....	29	41.4	353	30.1
21 to 50.....	78	16.7	2,397	16.1	21 to 50.....	17	24.3	491	41.9
51 to 100.....	34	7.3	2,321	15.6	51 to 100.....	2	2.9	124	10.6
101 to 500.....	20	4.3	3,917	26.4	101 to 500.....	1	1.4	143	12.2
501 to 1,000.....	2	0.4	1,344	9.0					
Over 1,000.....	2	0.4	2,680	18.0	<b>CLAY.....</b>	<b>41</b>	<b>100.0</b>	<b>622</b>	<b>100.0</b>
<b>COAL, BITUMINOUS.....</b>	<b>179</b>	<b>100.0</b>	<b>7,285</b>	<b>100.0</b>	1 to 5.....	16	39.0	47	7.6
No wage earners.....	1	0.6			6 to 20.....	16	39.0	220	35.4
1 to 5.....	44	24.6	145	2.0	21 to 50.....	7	17.1	222	35.7
6 to 20.....	56	31.3	624	8.6	51 to 100.....	2	4.9	133	21.4
21 to 50.....	40	22.3	1,258	17.3					
51 to 100.....	21	11.7	1,447	19.9	<b>BARYTES.....</b>	<b>66</b>	<b>100.0</b>	<b>490</b>	<b>100.0</b>
101 to 500.....	16	8.9	3,135	43.0	No wage earners.....	1	1.5		
501 to 1,000.....	1	0.6	676	9.3	1 to 5.....	39	59.1	86	17.9
					6 to 20.....	24	36.4	267	55.6
<b>LEAD AND ZINC.....</b>	<b>93</b>	<b>100.0</b>	<b>4,793</b>	<b>100.0</b>	21 to 50.....	1	1.5	27	5.6
No wage earners.....	19	20.4			51 to 100.....	1	1.5	100	20.8
1 to 5.....	34	36.6	85	1.2					
6 to 20.....	22	23.7	270	5.6					
21 to 50.....	9	9.7	265	5.5					
51 to 100.....	3	3.2	216	4.5					
101 to 500.....	3	3.2	639	13.3					
501 to 1,000.....	1	1.1	668	13.9					
Over 1,000.....	2	2.1	2,680	55.9					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enterprises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
<b>All industries.....</b>	<b>1,444</b>	<b>14,857</b>	<b>43</b>	<b>221</b>	<b>22</b>	<b>305</b>	<b>275</b>	<b>12,561</b>	<b>102</b>	<b>1,622</b>	<b>1</b>	<b>143</b>	<b>1</b>	<b>5</b>
Coal, bituminous.....	178	7,285	9	69	18	253	142	6,746	9	217				
Lead and zinc.....	74	4,793					65	4,734	9	59				
Limestone.....	69	1,171					22	330	46	698	1	143		
Clay.....	41	622	1	8			22	393	17	216			1	5
Barytes.....	65	490	33	144	3	45	18	99	11	192				
All other industries.....	17	506			1	7	6	259	10	240				

<sup>1</sup> Exclusive of 24 enterprises employing no wage earners in industries as follows: Barytes, 1; coal, bituminous, 1; granite, 1; iron ore, 1; lead and zinc, 19; limestone, 1.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries.....</b>	<b>14,857</b>	<b>17,319</b>	<b>16,479</b>	<b>15,406</b>	<b>15,014</b>	<b>14,501</b>	<b>14,401</b>	<b>14,871</b>	<b>14,907</b>	<b>15,672</b>	<b>15,720</b>	<b>8,965</b>	<b>15,020</b>	<b>51.3</b>
Coal, bituminous.....	7,285	<b>8,187</b>	8,971	7,982	7,534	7,141	7,162	7,667	7,240	7,631	7,873	<i>1,887</i>	7,696	15.2
Lead and zinc.....	4,793	<b>5,748</b>	5,233	4,971	4,829	4,596	4,475	<i>4,409</i>	4,684	4,829	4,667	4,548	4,544	78.6
Limestone.....	1,171	<b>912</b>	<i>826</i>	<i>926</i>	1,071	1,182	1,211	1,305	1,404	1,414	1,377	1,287	1,137	58.4
Clay.....	622	<b>533</b>	<i>536</i>	558	627	590	640	601	654	684	677	658	656	78.4
Barytes.....	490	<b>394</b>	<i>394</i>	441	434	471	468	484	489	577	575	518	515	68.3
All other industries.....	506	<b>545</b>	<i>519</i>	528	519	531	445	<i>419</i>	436	537	560	467	473	72.7

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Total.	PRODUCING ENTERPRISES.					
		Lead and zinc. <sup>1</sup>	Coal, bituminous.	Limestone.	Clay.	Barytes.	All other. <sup>2</sup>
Number of enterprises.....	468	93	179	70	41	66	19
Number of mines and quarries.....	494	96	196	71	42	70	19
Capital.....	\$47,926,850	\$26,758,399	\$11,788,513	\$2,447,811	\$1,963,503	\$1,200,611	\$3,778,013
<b>Principal expenses:</b>							
<b>Salaries and wages—</b>							
Officers.....	\$568,287	\$105,856	\$323,897	\$66,389	\$35,017	\$6,400	\$27,728
Superintendents and managers.....	\$741,816	\$323,389	\$276,147	\$64,536	\$38,063	\$15,805	\$23,895
Technical employees.....	\$90,835	\$59,064	\$16,839	\$11,476	.....	\$300	\$2,556
Clerks, etc.....	\$462,688	\$190,998	\$161,020	\$40,540	\$55,843	\$3,675	\$10,610
Wage earners.....	\$16,777,353	\$5,955,929	\$8,156,952	\$1,181,826	\$650,555	\$399,725	\$432,366
Supplies and materials.....	\$4,784,079	\$2,567,624	\$1,381,223	\$364,251	\$259,820	\$19,461	\$191,700
Cost of ore purchased.....	\$669	.....	.....	.....	.....	.....	.....
Fuel.....	\$1,743,747	\$1,106,807	\$427,842	\$126,078	\$22,169	\$1,759	\$69,002
Power.....	\$290,666	\$98,415	\$70,897	\$65,527	\$13,044	.....	\$69,793
Royalties and rents.....	\$780,604	\$295,427	\$268,923	\$20,717	\$172,270	\$6,809	\$16,458
Taxes.....	\$2,071,467	\$1,819,663	\$200,390	\$16,826	\$5,666	\$11,955	\$16,967
Contract work.....	\$415,843	\$65,798	\$306,081	\$19,564	\$2,800	\$7,000	\$15,108
Expenditures for development (included in the above items).....	\$1,141,068	\$586,047	\$457,422	\$31,918	\$25,035	\$14,871	\$24,806
Value of products.....	\$33,365,694	\$15,879,177	\$12,077,845	\$2,355,736	\$1,420,585	\$637,817	\$1,104,534
<b>Persons engaged in industry.....</b>	16,368	5,329	7,852	1,327	722	576	552
Proprietors and firm members (total).....	497	193	157	43	24	74	6
Number performing manual labor.....	219	108	85	13	7	2	4
Salaried officers.....	198	20	121	33	10	2	12
Superintendents and managers.....	355	134	135	39	20	12	15
Technical employees.....	55	34	12	6	.....	1	2
Clerks, etc.....	396	155	142	35	46	7	11
Wage earners (average number).....	14,867	4,793	7,285	1,171	622	490	506
<b>Wage earners by occupation (Dec. 15):</b>							
Above ground (total).....	7,229	2,341	2,127	1,841	296	625	499
Below ground (total).....	10,764	3,172	7,096	.....	421	.....	76
<b>Foremen, shift bosses, etc.—</b>							
Above ground.....	247	57	81	57	21	7	24
Below ground.....	238	106	110	.....	13	.....	9
<b>Enginemen, hoistmen, electricians, mechanics, etc.—</b>							
Above ground.....	1,337	532	510	139	32	5	69
Below ground.....	153	61	80	.....	10	.....	2
<b>Miners, quarrymen, and drillmen, including their helpers—</b>							
Above ground.....	1,273	13	306	543	43	233	135
Below ground.....	5,796	966	4,590	.....	213	.....	37
<b>Timbermen, trackmen, and men engaged in hauling, tramming, etc.—</b>							
Above ground.....	713	71	423	153	41	9	11
Below ground.....	2,218	882	1,186	.....	138	.....	12
<b>Muckers, loaders, laborers, and others not classified—</b>							
Above ground.....	2,196	317	765	399	130	371	214
Below ground.....	2,359	1,167	1,130	.....	47	.....	15
<b>Wage earners employed in mills and beneficiating plants—</b>							
Above ground.....	1,463	1,301	47	50	19	.....	46
<b>Number of females included in wage earners reported above—</b>							
Above ground.....	2	.....	1	.....	1	.....	.....
<b>Number of wage earners under 16 years of age included in those reported above—</b>							
Above ground.....	5	4	.....	.....	.....	.....	1
<b>Mineral land operated..... acres.....</b>	194,732	49,837	61,317	1,303	10,908	31,442	39,930
<b>Land controlled, total..... acres.....</b>	227,951	49,837	62,337	2,035	11,056	41,967	69,709
Mineral land owned.....	146,345	46,993	30,239	899	2,406	29,772	38,936
Mineral land leased.....	45,492	2,844	31,178	414	8,442	1,070	944
Timber and other lands owned and leased.....	36,114	.....	940	732	148	10,525	20,779
<b>Power used: Aggregate horsepower.....</b>	100,160	57,068	28,385	3,305	1,857	100	4,425
Prime movers (horsepower, total).....	82,967	50,545	26,435	4,052	925	100	1,910
<b>Steam engines—</b>							
Number.....	673	157	362	69	24	1	30
Horsepower.....	51,653	21,301	24,394	3,491	882	40	1,546
<b>Steam turbines—</b>							
Number.....	20	14	5	.....	.....	.....	1
Horsepower.....	25,860	26,115	335	.....	.....	.....	110
<b>Internal-combustion engines—</b>							
Number.....	170	35	92	16	10	7	10
Horsepower.....	5,754	4,129	705	561	43	60	255
Purchased power (horsepower, total).....	17,193	6,543	2,950	4,253	932	.....	2,515
<b>Electric motors operated by purchased current—</b>							
Number.....	613	105	140	145	65	.....	153
Horsepower.....	17,103	6,453	2,950	4,253	932	.....	2,515
Other equipment operated by purchased power—							
Horsepower.....	90	90	.....	.....	.....	.....	.....
<b>Electric motors run by current generated by enterprise using:</b>							
Number.....	436	332	130	8	.....	.....	16
Horsepower.....	16,850	13,149	3,123	218	.....	.....	360
<b>Fuel used:</b>							
Coal, bituminous..... tons, 2,000 pounds.....	483,858	309,657	143,433	22,484	4,655	.....	3,629
Wood..... cords.....	2,936	467	400	194	.....	450	1,045
Fuel oils..... barrels.....	14,161	7,219	141	1,517	4	50	5,230
Gasoline and other volatile oils..... barrels.....	2,425	679	873	366	76	67	364
Natural gas..... 1,000 cubic feet.....	21,898	21,898	.....	.....	.....	.....	.....

<sup>1</sup> Includes 4 reduction mills operated independently of mines and 4 operations on dumps and old tailings.<sup>2</sup> Includes enterprises as follows: Abrasive materials, 2; copper, 1; granite, 2; iron ore, 8; marble, 1; pyrite, 1; sandstone, 4.

## MONTANA.

Montana, which ranks third among the states in size (land area 146,131 square miles) and thirtieth in population (548,889 in 1920), ranked sixteenth in value of mineral products for 1919. The state ranked fifteenth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross amount received for products by operators of all mines, quarries, and wells in Montana in 1919 was \$49,923,721, a decrease of 9.2 per cent as compared with the corresponding amount, \$54,991,961, reported at the census of 1909. However, the value of products for 1919 includes a duplication of \$62,210, the value of gold and silver ores marketed by the producers and again reported after treatment by other operators; and correspondingly, the value of products for 1909 includes a duplication of \$6,559,820, the value of copper ores which were sold by some producers to others who used them as material. Deducting these duplications leaves the net value of products \$49,861,511 for 1919 and \$48,432,141 for 1909, an increase in the later year of 3 per cent over the earlier year. These figures for value of products include receipts for mineral by-products, custom milling, power sold, and for work or miscellaneous services for other enterprises which amounted to \$215,159 in 1919.

Because of the wide difference in the proportion of duplicated products to total products for the two census years and since the amounts reported in dollars for 1919 have been affected as much by general price increases as by change in volume of mining business, neither the increase in capital nor the decrease in the aggregate of principal expenditures, as shown in Table 1, serve to measure correctly the growth or decline in mining in Montana during the census period. So also the large decreases in the number of enterprises and the individual mines and quarries operated do not indicate notable decline in mining, but reflect the temporarily adverse industrial conditions in 1919.

The mining industries reported for 1919, classified by principal products and listed in order of value of products, were copper, lead and zinc, bituminous coal, gold and silver (from lode mines), manganese ore, gold (from placer mines), petroleum and natural gas, limestone, iron ore, clay, granite, sandstone, graphite, and silica. The industries for which the statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mining activities in Montana in 1919 were the mining and milling of gold, silver, copper, lead, and zinc ores. These operations represented 59.1 per cent of all mining enterprises in the state, employed 73.6 per cent of the average number of wage earners, and were credited with products valued at \$39,623,472, or 79.4 per cent of the total value of mineral products. This amount is not the value of the metals produced or recoverable but is, for the most part, an estimate of the sales value of the ores, concentrates, bullion, and mine-water precipitates or, in other words, the mine and mill products, most of which were not sold by the producers but were smelted, or smelted and refined, by them. The smelting and refining operations and the value of the metals—the final products—are reported by the census of manufactures. On the basis of combined value of products of gold, silver, copper, lead and zinc mines, Montana ranked second among the states. It ranked third in value of output of mines producing principally copper, fourth in value of output of mines producing chiefly lead and zinc, and seventh in value of output of mines producing principally gold and silver. Production of these metals was chiefly from the Butte district in Silver Bow County, although 17 other western counties were productive.

Coal mining was second in importance in Montana in 1919, with products valued at \$8,591,211, representing 17.2 per cent of the total value of products, and with wage earners representing 23.5 per cent of the total number of wage earners in the mining industries. Carbon, Musselshell, and Cascade Counties were the chief sources of production, but 11 other counties in the northcentral and northeastern parts of the state were also productive.

The production of manganese ores was third in importance in Montana, which ranked first among the states in the output of this commodity. Data for the industry are not shown in order to avoid disclosure of individual operations.

In addition to the operation of the producing mines and quarries, some work was done in Montana on properties which were not productive in 1919. Thirty-six such enterprises were reported in the metal-mining industries. These enterprises with a combined capital of \$5,600,431 employed 263 wage earners and reported \$712,084 spent for development during the year. The number of wage earners em-

ployed and the amount expended for development represent less than 2 per cent of the aggregate number of wage earners and of the aggregate expenditures reported for all mining operations in the state.

The character of organizations conducting mining enterprises in Montana in 1919 is brought out in Table 3. This table shows that while corporations operated only 39.8 per cent of the total number of enterprises, they employed 97.8 per cent of the total number of wage earners, and reported 98.1 per cent of the total value of products. Table 3 also shows that on the basis of average value of products per enterprise, for all industries combined and for each of the selected industries presented separately, corporations conducted by far the most important enterprises.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Montana, 23.6 per cent had no wage earners and 68 per cent had fewer than 101 each and employed only 12.8 per cent of the total number of wage earners. On the other hand, only 8.5 per cent of the total number of enterprises had more than 100 wage earners each, and these enterprises em-

ployed 87.2 per cent of the total number of wage earners. The larger enterprises are shown in the metal-mining and coal-mining industries.

Table 5 shows that in approximately half of the enterprises having wage earners and for 29.8 per cent of the wage earners employed the prevailing hours of labor were 44 to 53 per week, and in nearly all the other enterprises and for 69.8 per cent of the wage earners the hours of labor were 54 to 62 per week. For the most part the 8-hour day prevailed—with a 7-day week in the metal-mining industries and a 6-day week in the coal-mining industry.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. An abnormal minimum is shown for the coal-mining industry in the month of November because of the great strike, which also accounts for the November minimum in the figures for all industries combined.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

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TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	259	373	-30.6	Capital.....	\$209,236,955	\$145,135,510	44.2
Number of mines and quarries.....	260	543	-50.5	Principal expenses:			
Number of petroleum and natural-gas wells.....	28			Salaries.....	2,504,301	1,413,073	77.2
Persons engaged.....	17,345	20,134	-13.9	Wages.....	25,723,908	21,361,406	20.4
Proprietors and firm members, total.....	298	504	-41.9	Contract work.....	115,521	394,499	-70.7
Number performing manual labor in or about the mines, quarries, and wells.....				Supplies and materials <sup>2</sup> .....	9,514,869	16,397,323	-42.0
Salaried employees.....	199	355	-43.9	Fuel and power.....	2,979,928	3,628,050	-17.9
Wage earners (average number).....	923	784	17.7	Royalties and rents.....	646,125	1,822,875	-64.6
Power used (horsepower).....	16,129	18,846	-14.4	Taxes.....	1,018,265	453,398	124.6
	143,718	174,389	-17.6	Value of products.....	49,923,721	51,991,961	-9.2

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes cost of ore purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	259	16,129	100.0	\$49,923,721	100.0	Petroleum and natural gas.....	5	38	0.2	258,046	0.5
Gold, silver, copper, lead, and zinc, lode mines.....	153	11,862	73.6	39,623,472	79.4	Limestone.....	7	87	0.5	191,887	0.4
Coal, bituminous.....	67	3,797	23.5	8,591,211	17.2	Granite.....	3	4	(3)	12,944	(3)
						All other industries <sup>1</sup> .....	24	341	2.1	1,246,161	2.5

<sup>1</sup> Includes enterprises in industries as follows: Clay, 3; gold, placer mines, 9; graphite, 1; iron ore, 2; manganese ore, 6; sandstone, 2; silica, 1.  
<sup>2</sup> Less than one-tenth of 1 per cent.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	259	16,129	\$49,923,721	\$192,756	100.0	100.0	100.0
Corporation.....	108	15,770	48,956,538	475,306	39.8	97.8	98.1
Individual.....	73	188	395,066	5,412	23.2	1.2	0.8
Firm <sup>1</sup> .....	83	171	672,097	6,833	32.0	1.1	1.1
GOLD, SILVER, COPPER, LEAD, AND ZINC, LODGE MINES.....	153	11,862	39,623,472	258,977	100.0	100.0	100.0
Corporation.....	53	11,730	39,194,355	739,516	34.6	98.9	98.9
Individual.....	45	77	171,121	3,803	29.4	0.6	0.4
Firm <sup>2</sup> .....	55	55	257,996	4,661	35.9	0.5	0.7
COAL, BITUMINOUS.....	67	3,797	8,591,211	128,227	100.0	100.0	100.0
Corporation.....	29	3,641	8,217,769	288,371	43.3	95.9	95.6
Individual.....	21	84	174,776	8,828	31.3	2.2	2.0
Firm <sup>3</sup> .....	17	72	198,676	11,687	25.4	1.9	2.3
PETROLEUM AND NATURAL GAS.....	5	38	258,046	51,609	100.0	100.0	108.0
Corporation.....	5	38	258,046	51,609	100.0	100.0	100.0
LIMESTONE AND GRANITE.....	10	91	204,831	20,483	100.0	100.0	100.0
Corporation.....	4	63	152,500	38,125	40.0	69.2	74.5
Individual <sup>3</sup> .....	6	28	52,331	8,722	60.0	30.8	25.5

<sup>1</sup> Includes 2 other forms of organization.

<sup>2</sup> Includes 1 other form of organization.

<sup>3</sup> Includes 2 firms.



## MINES AND QUARRIES—MONTANA.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES .....	259	100.0	16,129	100.0	COAL, BITUMINOUS.....	67	100.0	3,797	100.0
No wage earners.....	61	23.6			No wage earners.....	1	1.5		
1 to 5.....	108	39.8	208	1.3	1 to 5.....	27	40.3	54	1.4
6 to 20.....	45	17.4	502	3.1	6 to 20.....	18	26.9	173	4.6
21 to 50.....	16	6.2	488	3.0	21 to 50.....	6	9.0	190	5.0
51 to 100.....	12	4.6	870	5.4	51 to 100.....	5	7.5	348	9.2
101 to 500.....	16	6.2	3,288	20.1	101 to 500.....	8	11.9	1,715	45.2
501 to 1,000.....	4	1.5	2,613	16.2	501 to 1,000.....	2	3.0	1,317	34.7
Over 1,000.....	2	0.8	8,210	50.9					
GOLD, SILVER, COPPER, LEAD, AND ZINC, LODE MINES.....	153	100.0	11,862	100.0					
No wage earners.....	54	35.3							
1 to 5.....	55	35.9	108	0.9					
6 to 20.....	19	12.4	220	1.9					
21 to 50.....	8	5.2	243	2.0					
51 to 100.....	6	3.9	470	4.0					
101 to 500.....	7	4.6	1,805	11.0					
501 to 1,000.....	2	1.3	1,296	10.9					
Over 1,000.....	2	1.3	8,210	69.2					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	1,198	16,129	1	24	5	38	100	4,808	92	11,250
Gold, silver, copper, lead, and zinc, lode mines.....	99	11,862					31	1,030	68	10,832
Coal, bituminous.....	66	3,797	1	24	5	38	55	3,718	5	17
All other industries.....	33	470					14	60	19	410

<sup>1</sup> Exclusive of 61 enterprises employing no wage earners in industries, as follows: Clay, 3; coal, bituminous, 1; gold, silver, copper, lead and zinc, lode mines, 54; gold, placer mines, 2; sandstone, 1.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	16,392	<b>21,180</b>	16,861	16,215	15,554	15,352	15,611	16,271	16,480	15,819	16,989	<i>14,805</i>	16,247	67.3
Producing enterprises.....	16,129	<b>20,911</b>	16,661	16,017	15,329	15,104	15,334	15,910	16,197	15,530	16,685	<i>13,929</i>	15,958	66.6
Gold, silver, copper, lead, and zinc, lode mines.....	11,862	<b>18,956</b>	12,117	11,398	11,098	10,986	11,313	11,652	11,701	10,883	11,860	<i>12,324</i>	11,066	68.2
Coal, bituminous.....	3,797	<b>4,464</b>	4,101	4,107	3,732	3,601	3,613	3,807	4,029	4,178	4,379	<i>1,724</i>	4,429	25.2
Limestone.....	87	<b>81</b>	70	83	89	95	115	100	94	83	82	<i>83</i>	89	60.0
Petroleum and natural gas.....	38	<b>35</b>	35	35	36	40	40	40	41	40	40	<i>36</i>	38	85.4
Granite.....	4	<b>4</b>			4	6	7	7	8	6	6	<i>2</i>	2	25.0
All other industries.....	341	<b>375</b>	338	<i>334</i>	370	376	<i>336</i>	304	324	340	318	353	364	59.9
Nonproducing enterprises: Gold, silver, copper, lead or zinc, lode mines.....	263	<b>189</b>	200	196	225	248	287	<b>341</b>	283	289	304	283	289	52.4

MINES AND QUARRIES—MONTANA.

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TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.							NONPRO- DUCING ENTER- PRISES.
		Total.	Gold, silver, lead, and zinc, lode mines. <sup>1</sup>	Coal, bitumi- nous.	Petrole- um and natural gas.	Lime- stone.	Granite.	All other. <sup>2</sup>	
Number of enterprises.....	295	259	153	67	5	7	3	24	36
Number of mines and quarries.....	308	269	159	76	.....	7	3	24	36
Number of petroleum and natural-gas wells.....	28	28	.....	.....	28	.....	.....	.....	.....
Capital.....	\$214, 587, 336	\$209, 286, 955	\$197, 434, 994	\$7, 742, 364	\$827, 067	\$445, 931	\$33, 025	\$2, 803, 574	\$5, 000, 431
Principal expenses:									
Salaries and wages—									
Officers.....	\$367, 029	\$357, 766	\$273, 732	\$73, 575	\$2, 318	\$1, 541	.....	\$6, 300	\$9, 263
Superintendents and managers.....	\$813, 485	\$774, 858	\$576, 950	\$158, 605	\$6, 888	\$5, 893	.....	\$26, 522	\$38, 627
Technical employees.....	\$397, 048	\$393, 175	\$369, 854	\$19, 241	\$1, 800	.....	.....	\$2, 280	\$3, 973
Clerks, etc.....	\$682, 004	\$975, 502	\$854, 056	\$105, 633	\$3, 354	\$3, 624	.....	\$11, 835	\$3, 502
Wage earners.....	\$26, 163, 710	\$25, 725, 908	\$19, 249, 280	\$5, 708, 810	\$58, 067	\$110, 806	\$5, 006	\$596, 949	\$439, 802
Supplies and materials.....	\$9, 662, 946	\$9, 452, 659	\$7, 827, 462	\$1, 183, 810	\$43, 492	\$55, 678	\$2, 548	\$389, 669	\$200, 287
Cost of ore purchased.....	\$62, 210	\$62, 210	\$62, 210	.....	.....	.....	.....	.....	.....
Fuel.....	\$1, 310, 531	\$1, 267, 627	\$947, 725	\$280, 309	\$14, 999	\$7, 114	\$635	\$16, 855	\$42, 904
Power.....	\$1, 725, 208	\$1, 712, 301	\$1, 590, 185	\$59, 979	.....	\$6, 820	.....	\$55, 317	\$12, 907
Royalties and rents.....	\$646, 125	\$646, 125	\$478, 034	\$139, 369	\$15, 568	.....	\$600	\$11, 654	.....
Taxes.....	\$1, 024, 491	\$1, 015, 265	\$817, 621	\$168, 097	\$10, 862	\$2, 437	\$72	\$39, 176	\$6, 236
Contract work.....	\$132, 828	\$115, 521	\$91, 797	\$6, 665	\$2, 272	.....	.....	\$14, 787	\$17, 307
Expenditures for development (included in the above items).....	\$3, 857, 204	\$3, 145, 120	\$2, 702, 651	\$311, 434	\$60, 261	\$11, 260	\$1, 000	\$58, 524	\$712, 084
Value of products.....	\$49, 923, 721	\$49, 923, 721	\$39, 623, 472	\$8, 591, 211	\$258, 046	\$191, 887	\$12, 944	\$1, 246, 161	.....
Persons engaged in industry.....	17, 665	17, 345	12, 740	4, 056	48	99	7	395	320
Proprietors and firm members (total).....	267	293	184	70	.....	6	3	80	4
Number performing manual labor.....	199	199	144	37	.....	2	2	14	.....
Salaried officers.....	78	68	28	35	2	.....	.....	3	10
Superintendents and managers.....	248	218	147	56	3	4	.....	8	30
Technical employees.....	169	165	150	13	1	.....	.....	1	4
Clerks, etc.....	481	472	369	85	4	2	.....	12	9
Wage earners (average number).....	16, 392	16, 199	11, 962	3, 797	38	87	4	341	263
Wage earners by occupation (Dec. 15):									
Above ground (total).....	4, 338	4, 226	3, 053	828	38	86	9	212	112
Below ground (total).....	13, 261	13, 089	9, 007	3, 735	.....	.....	.....	297	312
Foremen, shift bosses, etc.—									
Above ground.....	209	197	141	34	.....	7	1	14	12
Below ground.....	533	513	430	67	.....	.....	.....	16	20
Engineers, hoistmen, electricians, mechanics, etc.—									
Above ground.....	1, 249	1, 188	768	335	29	7	.....	49	61
Below ground.....	466	463	325	138	.....	.....	.....	.....	3
Miners, quarrymen, and drillmen, including their helpers—									
Above ground.....	117	109	18	26	.....	32	4	29	8
Below ground.....	7, 617	7, 432	4, 662	2, 632	.....	.....	.....	188	185
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—									
Above ground.....	123	112	37	56	.....	1	2	16	11
Below ground.....	3, 851	3, 815	3, 154	615	.....	.....	.....	46	36
Muckers, loaders, laborers, and others not classified—									
Above ground.....	1, 193	1, 173	723	356	9	24	.....	61	20
Below ground.....	884	816	436	283	.....	.....	.....	97	68
Wage earners employed in mills and beneficiating plants—									
Above ground.....	1, 447	1, 447	1, 366	21	.....	15	2	43	.....
Number of females included in wage earners reported above—									
Above ground.....	9	4	3	.....	.....	.....	.....	1	5
Mineral and oil land operated..... acres.....	113, 690	107, 541	19, 076	73, 907	4, 760	1, 823	425	7, 490	6, 139
Land controlled, total..... acres.....	137, 724	131, 085	25, 614	82, 266	4, 760	1, 823	425	9, 177	6, 639
Mineral and oil land owned.....	83, 452	79, 309	13, 004	55, 124	1, 960	1, 680	405	7, 127	4, 182
Mineral and oil land leased.....	31, 640	26, 538	6, 164	20, 183	2, 800	143	20	363	1, 967
Timber and other lands owned and leased.....	12, 632	15, 132	3, 446	6, 979	.....	.....	.....	1, 707	500
Power used: Aggregate horsepower.....	146, 514	143, 718	111, 481	27, 077	245	1, 290	75	3, 850	2, 796
Prime movers (horsepower, total).....	52, 329	50, 593	30, 188	19, 132	245	235	75	718	1, 736
Steam engines—									
Number.....	135	117	49	60	4	2	.....	2	18
Horsepower.....	43, 304	41, 967	26, 745	14, 679	138	125	.....	300	1, 317
Steam turbines—									
Number.....	13	13	.....	13	.....	.....	.....	.....	.....
Horsepower.....	4, 350	4, 350	.....	4, 350	.....	.....	.....	.....	.....
Internal-combustion engines—									
Number.....	72	53	22	11	5	1	3	11	19
Horsepower.....	1, 327	1, 083	315	103	107	40	75	393	294
Water wheels and turbines—									
Number.....	23	20	16	.....	.....	2	.....	2	2
Horsepower.....	3, 348	3, 223	3, 128	.....	.....	70	.....	25	125
Purchased power (horsepower, total).....	94, 185	98, 125	81, 293	7, 945	.....	1, 055	.....	2, 832	1, 060
Electric motors operated by purchased current—									
Number.....	1, 562	1, 543	1, 292	185	.....	15	.....	51	19
Horsepower.....	94, 185	98, 125	81, 293	7, 945	.....	1, 055	.....	2, 832	1, 060
Electric motors run by current generated by enterprise using:									
Number.....	6, 711	179	34	145	.....	.....	.....	.....	1
Horsepower.....	180	6, 066	1, 457	5, 239	.....	.....	.....	.....	15
Fuel used:									
Coal, bituminous..... tons, 2,000 pounds.....	239, 989	325, 787	169, 564	163, 486	197	1, 065	5	1, 450	4, 202
Coke..... tons, 2,000 pounds.....	4, 574	4, 574	4, 574	.....	.....	.....	.....	.....	.....
Wood..... cords.....	6, 765	5, 683	5, 599	.....	.....	43	.....	42	1, 082
Fuel oils..... barrels.....	1, 511	861	866	.....	.....	.....	85	.....	590
Gasoline and other volatile oils..... barrels.....	1, 306	1, 459	479	.....	113	.....	2	.....	349
Natural gas..... 1,000 cubic feet.....	671, 621	671, 621	.....	.....	671, 621	.....	.....	.....	.....

<sup>1</sup> Includes 3 reduction mills operated independently of mines and 5 operations on dumps and old tailings.  
<sup>2</sup> Includes enterprises as follows: Clay, 3; gold, placer mines, 9; graphite, 1; iron ore, 2; manganese ore, 6; sandstone, 2; silica, 1.

## NEVADA.

Nevada, which ranks sixth among the states in size (land area 109,821 square miles) and forty-ninth in population (77,407 in 1920), ranked twenty-sixth in value of mineral products for 1919. The state ranked twenty-ninth in the total number of persons engaged in the mining industries and in the number of wage earners employed.

The total amount received for products by the operators of all mines and quarries in Nevada in 1919 was \$18,053,984, which was a decrease of 22.4 per cent as compared with the gross value of the products of mines and quarries reported at the census of 1909 (\$23,271,597). The 1909 figures include duplication to the amount of \$1,610,449 in the value of gold and silver ores sold by some operators to others who used it as material. Deducting this amount leaves \$21,661,148 as the net value of products for 1909, and this compared with the value for 1919 shows a decrease of 16.7 per cent. The figures include receipts for custom milling, power sold, and work or miscellaneous services for other enterprises which amounted to \$468,655 in 1919.

The worth of the percentages of decrease in value of products and of increases in salaries, wages, cost of supplies and materials and fuel and power, shown in Table 1, is impaired for purposes of comparison by general price increases during the decade. The decreases in number of enterprises and individual mines and quarries operated are largely due to the temporarily adverse industrial conditions in 1919, in the face of which the smallness of the decrease in average number of wage earners is significant of growth of mining during the census period.

The mining industries reported for 1919, classified by principal products and listed in the order of value of products, were gold and silver (lode), copper, lead and zinc, gypsum, ores of rare metals (tungsten), placer gold, quicksilver, sulphur, fuller's earth, abrasive materials, limestone, fluorspar, and graphite. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The principal mining activities in Nevada in 1919 were the mining of gold and silver, copper, and lead and zinc ores. Enterprises so engaged constituted 87.7 per cent of the total number of enterprises, employed 93.8 per cent of the total number of wage earners, and reported 94.7 per cent of the total value of products. The value of the products reported as that of the metalliferous lode mines is not the value of the metals recovered, but is the actual amount received by the producers for the ores, concentrates, bullion, etc., disposed of or, where these were smelted and refined by the producers, the amount reported

to the census of mines and quarries was an estimate of the value of the mine and mill products.

The leading lode mining industry was the mining of gold and silver ores in which Nevada ranked second in the United States. This industry embraced 72.9 per cent of the total number of enterprises in the state, employed 49.3 per cent of the wage earners, and reported value of products amounting to \$9,687,431, which was 53.7 per cent of the total value of all mining products. The production came chiefly from Nye, Esmeralda, and Elko Counties, although twelve other counties also produced gold. The statistics on gold and silver mining here presented include figures for one enterprise in Clark County producing ores of which the chief value was in palladium and platinum.

The industries second and third in importance in Nevada in 1919 were copper mining and lead and zinc mining. Nevada was the sixth state in copper mining, and eleventh in mining of lead and zinc. Together these industries included approximately 15 per cent of the total number of enterprises, employed 44.5 per cent of the total number of wage earners, and reported products valued at \$7,393,392, or 41 per cent of the total for the state. Lead and zinc mines reported from 7 counties, among which Clark and Lincoln were the largest producers. Copper mines located in 8 counties reported, but the bulk of the production came from the Ely district in White Pine County.

In addition to the operations of producing mines and quarries, considerable work was done in Nevada on properties which were not productive during the year. One hundred and eighteen such enterprises were reported, one a marble quarry, the others gold, silver, copper, lead, or zinc mines. These enterprises, with a combined capital of \$18,195,968, employed 685 wage earners and expended for development during the year \$2,693,067, which amount represents practically 14 per cent of the aggregate number of wage earners and of the aggregate expenditures reported for all mining operations in the state.

The form or character of organizations conducting mining enterprises in Nevada in 1919 is shown in Table 3, which brings out the preponderance of incorporated enterprises over those of other forms. Corporations operated 58.1 per cent of all the producing mining enterprises, employed 94.8 per cent of the total number of wage earners, and reported 96.3 per cent of the total value of products.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Nevada, 97.5 per cent, or 198 out of 203, were in classes having no wage earners or fewer than 101, and the enterprises having them em-

ployed 50.9 per cent of the total number of wage earners. On the other hand, only 5 enterprises had more than 100 wage earners each, and these enterprises employed 49 per cent of the total number of wage earners. In Table 4 the larger enterprises employing wage earners are shown in the metal-mining industries.

Table 5 shows that in 82.3 per cent of the enterprises employing wage earners and for 91.8 per cent of the wage earners in all the mining industries in Nevada in 1919 the hours of labor were 54 to 62 per week. In

16.5 per cent of the enterprises and for 8.2 per cent of the wage earners the hours per week were 44 to 53. The 8-hour day prevailed generally with a 7-day week in a large majority of the enterprises.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	203	266	-23.7	Principal expenses:			
Number of mines and quarries.....	207	374	-44.7	Salaries.....	\$1,099,848	\$876,056	25.5
Persons engaged.....	4,860	5,333	-8.9	Wages.....	7,401,113	5,925,070	24.9
Proprietors and firm members, total.....	151	213	-29.1	Contract work.....	245,439	196,768	24.7
Number performing manual labor in or about the mines and quarries.....	120	148	-16.1	Supplies and materials.....	5,339,511	4,985,612	7.1
Salaried employees.....	478	478		Fuel and power.....	1,751,266	1,311,625	33.5
Wage earners (average number).....	4,231	4,642	-8.9	Royalties and rents.....	143,708	275,556	-47.8
Power used (horsepower).....	50,786	26,862	89.1	Taxes.....	462,663	243,129	90.3
Capital.....	\$82,500,057	\$120,002,830	-31.3	Value of products.....	18,053,984	23,271,597	-22.4

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes cost of ore purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	203	4,231	100.0	\$18,053,984	100.0	Gold, placer mines.....	8	19	0.4	\$63,649	0.4
Gold and silver, lode mines.....	148	2,084	49.3	9,687,431	53.7	Quicksilver.....	4	23	0.5	57,059	0.3
Copper and lead and zinc.....	30	1,884	44.5	7,393,392	41.0	All other industries <sup>1</sup> .....	13	221	5.2	852,453	4.7

<sup>1</sup> Includes enterprises in industries as follows: Abrasive materials, 2; fluorspar, 1; fuller's earth, 1; graphite, 1; gypsum, 3; limestone, 1; sulphur, 1; rare metals (tungsten), 3.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	203	4,231	\$18,053,984	\$88,936	100.0	100.0	100.0
Corporation.....	118	4,011	17,385,896	147,338	58.1	94.8	96.3
Individual.....	30	88	180,472	4,512	19.7	2.1	1.0
Firm.....	45	132	487,626	10,836	22.2	3.1	2.7
GOLD AND SILVER, LODE MINES.....	148	2,084	9,687,431	65,456	100.0	100.0	100.0
Corporation.....	85	1,896	9,105,027	107,118	57.4	91.0	94.0
Individual.....	30	66	154,019	5,134	20.3	3.2	1.6
Firm.....	33	122	428,385	12,981	22.3	5.9	4.4
COPPER AND LEAD AND ZINC.....	30	1,884	7,393,392	246,446	100.0	100.0	100.0
Corporation.....	18	1,876	7,354,412	408,578	60.0	99.6	99.5
Individual.....	7	5	15,708	2,244	23.3	0.3	0.2
Firm.....	5	3	23,272	4,654	16.7	0.2	0.3

MINES AND QUARRIES—NEVADA.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES.....</b>	<b>203</b>	<b>100.0</b>	<b>4,231</b>	<b>100.0</b>	<b>COPPER AND LEAD AND ZINC.....</b>	<b>30</b>	<b>100.0</b>	<b>1,894</b>	<b>100.0</b>
No wage earners.....	39	19.2	.....	.....	No wage earners.....	6	20.0	.....	.....
1 to 5.....	81	39.9	177	4.2	1 to 5.....	14	46.7	27	1.4
6 to 20.....	46	22.7	471	11.1	6 to 20.....	4	13.3	30	1.6
21 to 50.....	21	10.3	746	17.6	21 to 50.....	4	13.3	174	9.2
51 to 100.....	11	5.4	762	18.0	101 to 500.....	1	3.3	221	11.7
101 to 500.....	4	2.0	643	15.2	Over 1,000.....	1	3.3	1,432	76.0
Over 1,000.....	1	0.5	1,432	33.8	<b>QUICKSILVER.....</b>	<b>4</b>	<b>100.0</b>	<b>23</b>	<b>100.0</b>
<b>GOLD AND SILVER, LODE MINES..</b>	<b>148</b>	<b>100.0</b>	<b>2,084</b>	<b>100.0</b>	1 to 5.....	2	50.0	8	34.8
No wage earners.....	28	18.9	.....	.....	6 to 20.....	2	50.0	15	65.2
1 to 5.....	59	39.9	126	6.0	<b>GOLD, PLACER MINES.....</b>	<b>8</b>	<b>100.0</b>	<b>19</b>	<b>100.0</b>
6 to 20.....	33	22.3	350	16.8	No wage earners.....	5	62.5	.....	.....
21 to 50.....	16	10.8	548	26.3	1 to 5.....	2	25.0	5	26.3
51 to 100.....	9	6.1	638	30.6	6 to 20.....	1	12.5	14	73.7
101 to 500.....	3	2.0	423	20.2					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
	Enter-prises.	Wage earners.	36 to 43.		44 to 53.		54 to 62.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
<b>All industries.....</b>	<b>1164</b>	<b>4,231</b>	<b>1</b>	<b>2</b>	<b>27</b>	<b>345</b>	<b>135</b>	<b>3,883</b>	<b>1</b>	<b>1</b>
Gold and silver, lode mines.....	120	2,084	1	2	21	323	97	1,758	1	1
Copper and lead and zinc.....	24	1,884	.....	.....	2	2	4	1,882	.....	.....
Quicksilver.....	4	23	.....	.....	.....	.....	4	23	.....	.....
Gold, placer mines.....	3	19	.....	.....	.....	.....	3	19	.....	.....
All other industries.....	13	221	.....	.....	4	20	9	201	.....	.....

<sup>1</sup> Exclusive of 39 enterprises employing no wage earners in the following industries: Copper and lead and zinc, 6; gold and silver, lode mines, 28; gold, placer mines, 5.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries.....</b>	<b>4,916</b>	<b>5,489</b>	<b>4,678</b>	<b>4,599</b>	<b>4,647</b>	<b>4,973</b>	<b>5,245</b>	<b>5,301</b>	<b>4,196</b>	<b>4,271</b>	<b>4,818</b>	<b>5,292</b>	<b>5,473</b>	<b>76.3</b>
Producing enterprises.....	4,231	5,118	4,275	4,143	4,063	4,227	4,428	4,331	5,369	3,656	4,061	4,467	4,567	65.8
Gold and silver, lode mines.....	2,084	1,763	1,972	2,076	2,018	2,212	2,383	3,487	2,394	1,630	1,817	2,061	2,225	66.3
Copper and lead and zinc.....	1,884	3,076	2,055	1,841	1,797	1,736	1,803	1,638	673	1,767	2,006	2,143	2,075	21.9
Quicksilver.....	23	22	22	22	17	18	28	28	28	28	27	21	16	53.6
Placer mines.....	19	28	26	27	24	18	15	17	18	18	16	10	11	35.7
All other industries.....	221	280	200	177	207	243	199	241	264	213	215	232	241	69.7
Nonproducing enterprises.....	685	381	408	456	584	746	817	960	830	615	737	826	906	41.4

MINES AND QUARRIES—NEVADA.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.						Non-producing enterprises. <sup>1</sup>
		Total.	Gold and silver, lode mines. <sup>1</sup>	Copper and lead and zinc.	Gold, placer mines.	Quick-silver.	All other. <sup>2</sup>	
Number of enterprises.....	321	208	148	30	8	4	13	118
Number of mines and quarries.....	325	207	148	34	8	4	13	118
Capital.....	\$100,008,025	\$82,500,057	\$38,262,116	\$40,130,509	\$76,500	\$211,000	\$3,819,933	\$18,195,968
Principal expenses:								
Salaries and wages—								
Officers.....	\$330,313	\$246,254	\$193,492	\$46,092	.....	\$600	\$6,070	\$93,050
Superintendents and managers.....	\$649,534	\$478,260	\$326,231	\$112,283	.....	\$7,610	\$29,186	\$174,574
Technical employees.....	\$176,466	\$145,441	\$109,523	\$25,518	.....	\$400	.....	\$30,025
Clerks, etc.....	\$267,737	\$232,493	\$134,179	\$78,937	.....	.....	\$19,777	\$34,844
Wage earners.....	\$8,508,318	\$7,401,113	\$3,808,482	\$3,235,703	\$30,662	\$43,991	\$282,275	\$1,102,205
Supplies and materials.....	\$6,354,609	\$5,339,511	\$2,699,091	\$2,382,403	\$11,780	\$17,427	\$261,810	\$1,015,088
Fuel.....	\$1,171,459	\$1,112,427	\$265,463	\$302,619	\$500	\$4,010	\$39,835	\$59,032
Power.....	\$741,371	\$638,339	\$534,707	\$67,736	\$1,544	.....	\$34,862	\$102,532
Royalties and rents.....	\$144,144	\$143,708	\$121,179	\$14,584	.....	\$6,617	\$400	\$436
Taxes.....	\$491,425	\$462,063	\$250,450	\$197,688	\$756	.....	\$13,262	\$27,762
Contract work.....	\$324,916	\$225,429	\$177,312	\$68,117	.....	.....	.....	\$109,487
Expenditures for development (included in the above items).....	\$5,179,347	\$2,496,290	\$1,672,213	\$754,613	.....	\$21,327	\$38,127	\$2,068,067
Value of products.....	\$18,053,984	\$18,053,984	\$9,687,431	\$7,393,392	\$63,640	\$57,050	\$852,453	.....
Persons engaged in industry.....	5,798	4,860	2,515	2,024	32	30	259	938
Proprietors and firm members (total).....	161	151	112	19	13	2	5	10
Number performing manual labor.....	122	120	89	17	12	2	.....	2
Salaried officers.....	161	86	66	17	.....	1	2	75
Superintendents and managers.....	255	156	106	33	.....	3	14	99
Technical employees.....	90	68	53	14	.....	1	.....	22
Clerks, etc.....	215	168	94	57	.....	.....	17	47
Wage earners (average number).....	4,916	4,231	2,084	1,884	19	28	221	685
Wage earners by occupation (Dec. 15):								
Above ground (total).....	3,068	2,725	851	1,640	8	14	212	343
Below ground (total).....	3,206	2,517	1,790	622	3	12	160	601
Foremen, shift bosses, etc.—								
Above ground.....	254	221	52	155	.....	2	12	33
Below ground.....	205	153	32	66	.....	.....	5	52
Enginemen, hoistmen, electricians, mechanics, etc.—								
Above ground.....	832	693	260	405	1	1	26	139
Below ground.....	109	69	32	32	.....	.....	5	40
Miners, quarrymen, and drillmen, including their helpers—								
Above ground.....	199	119	28	66	5	.....	29	89
Below ground.....	1,581	1,210	815	260	3	12	120	371
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—								
Above ground.....	230	207	52	152	1	.....	2	23
Below ground.....	556	459	380	76	.....	.....	3	97
Muckers, loaders, laborers, and others not classified—								
Above ground.....	456	388	167	152	1	3	65	68
Below ground.....	757	626	411	188	.....	.....	27	131
Wage earners employed in mills and beneficiating plants—								
Above ground.....	1,097	1,097	292	710	.....	8	87	.....
Number of females included in wage earners reported above—								
Above ground.....	25	21	4	16	.....	.....	1	4
Mineral land operated..... acres.....	64,210	48,114	23,615	12,965	2,848	1,195	4,491	19,096
Land controlled, total..... acres.....	72,002	52,167	24,700	18,928	2,848	1,195	4,496	19,835
Mineral land owned.....	64,069	45,901	17,849	10,199	2,782	739	4,351	18,168
Mineral land leased.....	10,164	9,236	5,776	2,779	66	475	140	928
Timber and other lands owned and leased.....	7,769	7,030	1,075	5,850	.....	.....	5	739
Power used: Aggregate horsepower.....	59,782	50,786	32,605	16,009	140	36	1,996	8,996
Prime movers (horsepower, total).....	29,896	18,342	8,202	12,269	24	36	811	2,554
Steam engines—								
Number.....	37	24	13	16	.....	.....	5	3
Horsepower.....	9,125	9,035	590	8,080	.....	.....	415	90
Steam turbines—								
Number.....	1	.....	.....	1	.....	.....	.....	.....
Horsepower.....	3,600	3,600	.....	3,600	.....	.....	.....	.....
Internal-combustion engines—								
Number.....	289	193	142	31	4	6	10	96
Horsepower.....	8,008	5,539	4,444	639	24	36	396	2,464
Water wheels and turbines—								
Number.....	5	5	5	.....	.....	.....	.....	.....
Horsepower.....	168	168	168	.....	.....	.....	.....	.....
Purchased power (horsepower, total).....	38,886	32,444	27,403	3,740	116	.....	1,185	6,442
Electric motors operated by purchased current—								
Number.....	959	801	705	47	21	.....	28	158
Horsepower.....	38,886	32,444	27,403	3,740	116	.....	1,185	6,422
Other equipment operated by purchased power—								
Horsepower.....	20	.....	.....	.....	.....	.....	.....	20
Electric motors run by current generated by enterprise using:								
Number.....	293	290	8	281	.....	.....	1	3
Horsepower.....	10,131	10,086	255	9,829	.....	.....	2	45
Fuel used:								
Coal, bituminous..... tons, 2,000 pounds.....	113,862	113,708	1,802	111,461	25	.....	420	154
Coke..... tons, 2,000 pounds.....	376	376	.....	376	.....	.....	.....	.....
Wood..... cords.....	3,340	2,977	2,289	160	.....	508	29	368
Fuel oils..... barrels.....	67,443	64,363	49,306	3,690	.....	6	11,391	3,080
Gasoline and other volatile oils..... barrels.....	10,020	8,476	5,603	1,591	25	36	1,221	1,544

<sup>1</sup> Includes 1 enterprise producing ores of which the chief value was in palladium and platinum; 2 reduction mills operated independently of mines; and 5 operations on dumps and old tailings.

<sup>2</sup> Includes enterprises as follows: Abrasive materials, 2; fluor spar, 1; fuller's earth, 1; graphite, 1; gypsum, 3; limestone, 1; sulphur, 1; rare metals (tungsten), 3.

<sup>3</sup> Includes enterprises as follows: Gold, silver, copper, lead, or zinc, lode mines, 117; marble 1.

## NEW HAMPSHIRE.

New Hampshire, which ranks forty-third among the states in size (land area 9,031 square miles) and forty-first in population (443,083 in 1920), ranked forty-third in the value of mineral products in 1919. The state also ranked forty-third in the total number of persons engaged in the mining and quarrying industries and in the average number of wage earners employed.

The total value of products of all mines and quarries in New Hampshire in 1919 was \$1,568,195, which was an increase of 19.8 per cent as compared with the corresponding amount for 1909. Decreases in the number of enterprises, number of mines and quarries operated, and number of persons engaged in the mining industries, as shown in Table 1, marked the decline of these industries in the state of New Hampshire. Increases in salaries, cost of supplies and materials and fuel and power, and value of products are largely due to the general increase in prices since 1909, and not to actual growth of the industries. The large increase in taxes shown is accounted for by impost of Federal income taxes since 1909.

The mining and quarrying industries reported for 1919, classified by principal products and listed in the order of value of products, were granite, mica, fluorspar, and abrasive materials. In addition to the product indicated by the industry designation one operation classified as a mica enterprise also produced a small amount of feldspar, the value of which is included in the total value of products given above.

The leading mineral industry in 1919 was granite quarrying which included 23 enterprises, or 76.7 per cent of the total number of enterprises. This industry employed 86.4 per cent of the total number of wage earners, and produced stone valued at \$1,427,979, or

91.1 per cent of the total value of products for all mines and quarries in the state.

Table 2 shows that among the operators of mining enterprises in New Hampshire corporations were most numerous. Of the total number of enterprises 43.3 per cent had a corporate form of organization, they employed 60.1 per cent of all wage earners in the mining industries in the state, and reported 55.3 per cent of the total value of all mineral products. The table also shows that in the granite industry ownership or control by individuals was more common than by corporations, but that the latter conducted the larger and more important enterprises.

The relatively large number of small enterprises, as determined by the average number of wage earners employed, is shown in Table 3. Of the total number of mining enterprises in this state, 83.3 per cent were in classes having no wage earners or less than 51, and these enterprises employed 33.8 per cent of the total number of wage earners. The remaining five enterprises, or 16.6 per cent of the total number, employed 66.3 per cent of the total number of wage earners. Only one enterprise had more than 100 wage earners; this was in the granite industry and employed 167 wage earners, or 24.5 per cent of the total number reported for the state.

Table 4 shows that in a majority of the enterprises and for 90 per cent of the wage earners the prevailing hours of labor were 44 to 53 per week.

The statistics for wage earners presented in Table 5, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 6 presents for 1919 statistics in detail for the state as a whole and for granite, the only industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	39	45		Capital.....	\$1,658,509	\$1,546,503	7.2
Number of mines and quarries.....	33	53		Principal expenses:			
Persons engaged.....	757	1,508	-49.8	Salaries.....	96,324	53,488	80.1
Proprietors and firm members, total.....	30	42		Wages.....	826,547	926,352	-10.9
Number performing manual labor in or about the mines and quarries.....	17	17		Contract work.....	34,520	9,246	273.4
Salaried employees.....	45	49		Supplies and materials.....	144,946	100,981	43.6
Wage earners (average number).....	682	1,418	-51.9	Fuel and power.....	64,980	54,427	19.4
Power used (horsepower).....	4,336	3,771	15.0	Royalties and rents.....	6,268	4,271	46.8
				Taxes.....	24,719	5,251	370.7
				Value of products.....	1,568,195	1,308,597	19.8

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	30	682	\$1,568,195	\$53,278	100.0	100.0	100.0
Corporation.....	13	410	867,304	66,716	43.3	60.1	55.3
Individual.....	10	69	132,683	13,268	33.3	10.1	8.5
Firm.....	7	203	568,208	81,178	23.3	29.8	36.2
GRANITE.....	23	589	1,427,979	62,086	100.0	100.0	100.0
Corporation.....	7	317	727,884	103,983	80.4	53.8	51.0
Individual.....	9	69	131,887	14,654	39.1	11.7	9.2
Firm.....	7	203	568,208	81,178	30.4	34.5	39.8

TABLE 3.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	30	100.0	682	100.0	GRANITE.....	23	100.0	589	100.0
No wage earners.....	4	13.3			No wage earners.....	3	13.0		
1 to 5.....	9	30.0	19	2.8	1 to 5.....	8	34.8	14	2.4
6 to 20.....	8	26.7	98	14.4	6 to 20.....	4	17.4	55	9.3
21 to 50.....	4	13.3	113	16.6	21 to 50.....	3	13.0	69	11.5
51 to 100.....	4	13.3	285	41.8	51 to 100.....	4	17.4	285	48.4
101 to 500.....	1	3.3	167	24.5	101 to 500.....	1	4.3	167	28.4

TABLE 4.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—					
			35 and under.		44 to 53.		54 to 62.	
	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries.....	126	632	1	23	19	614	6	45
Granite.....	20	539	1	23	17	564	2	2
All other industries.....	6	93			2	50	4	43

<sup>1</sup> Exclusive of 4 enterprises employing no wage earners in industries as follows: Granite, 3; mica, 1.

TABLE 5.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	682	<b>544</b>	360	398	571	708	830	839	<b>887</b>	800	871	918	698	33.8
Granite.....	589	<b>800</b>	271	302	479	624	739	747	779	<b>763</b>	780	726	598	33.3
All other industries.....	93	<i>84</i>	<i>89</i>	96	92	<i>84</i>	91	92	106	97	91	92	100	77.8



## MINES AND QUARRIES—NEW HAMPSHIRE.

TABLE 6.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.				PRODUCING ENTERPRISES.		
	Total.	Granite.	All other. <sup>1</sup>		Total.	Granite.	All other. <sup>1</sup>
Number of enterprises.....	30	23	7	Persons engaged in industry—Continued. Wage earners by occupation, etc.—Contd. Miners, quarrymen, and drillmen, including their helpers— Above ground.....	247	221	26
Number of mines and quarries.....	33	24	9		Below ground.....	15	.....
Capital.....	\$1,658,509	\$1,455,796	\$202,723	Timbermen, trackmen, and men engaged in hauling, tramming, etc.— Above ground.....	15	13	2
Principal expenses:				Muckers, loaders, laborers, and others not classified— Above ground.....	55	48	7
Salaries and wages—				Wage earners employed in mills and beneficiating plants— Above ground.....	359	318	41
Officers.....	\$24,590	\$24,590	.....	Mineral land operated..... acres..	10,030	4,688	5,342
Superintendents and managers.....	\$51,490	\$45,497	\$5,993	Land controlled, total..... acres..	10,531	5,179	5,352
Technical employees.....	\$6,784	\$6,784	.....	Mineral land owned.....	8,698	4,655	4,043
Clerks, etc.....	\$13,460	\$9,541	\$3,919	Mineral land leased.....	1,332	33	1,299
Wage earners.....	\$325,547	\$744,023	\$81,524	Timber and other lands owned and leased..	501	491	10
Supplies and materials.....	\$144,946	\$110,782	\$34,164	Power used: Aggregate horsepower.....	4,336	4,121	215
Fuel.....	\$41,567	\$37,956	\$3,611	Prime movers (horsepower, total).....	2,673	2,458	215
Power.....	\$23,413	\$23,413	.....	Steam engines—			
Royalties and rents.....	\$6,268	\$1,060	\$5,208	Number.....	73	64	9
Taxes.....	\$24,719	\$26,672	\$1,957	Horsepower.....	2,625	2,415	210
Contract work.....	\$34,520	\$34,520	.....	Internal-combustion engines—			
Expenditures for development (included in the above items).....	\$55,049	\$14,814	\$40,235	Number.....	5	4	1
Value of products.....	\$1,668,195	\$1,427,979	\$140,216	Horsepower.....	48	43	5
Persons engaged in industry.....	757	657	100	Purchased power (horsepower, total).....	1,663	1,663	.....
Proprietors and firm members (total).....	30	29	1	Electric motors operated by purchased current—			
Number performing manual labor.....	17	17	.....	Number.....	49	49	.....
Salaried officers.....	6	6	.....	Horsepower.....	1,663	1,663	.....
Superintendents and managers.....	25	22	3	Fuel used:			
Technical employees.....	2	2	.....	Coal, anthracite..... tons, 2,240 pounds..	53	50	3
Clerks, etc.....	12	9	3	Coal, bituminous..... tons, 2,000 pounds..	5,027	4,853	174
Wage earners (average number).....	682	589	93	Wood..... cords..	420	124	296
Wage earners by occupation (Dec. 15):				Fuel oils..... barrels..	88	88	.....
Above ground (total).....	1773	1600	83	Gasoline and other volatile oils..... barrels..	162	142	20
Below ground (total).....	16	.....	16				
Foremen, shift bosses, etc.—							
Above ground.....	22	18	4				
Below ground.....	1	.....	1				
Enginemen, hoistmen, electricians, mechanics, etc.—							
Above ground.....	75	72	3				

<sup>1</sup> Includes enterprises as follows: Abrasive materials, 1; fluorspar, 1; mica, 5.<sup>2</sup> Includes 1 wage earner under 16 years of age.

## NEW JERSEY.

New Jersey, which ranks forty-fifth among the states in size (land area 7,514 square miles) and tenth in population (3,155,900 in 1920), ranked thirty-first in the value of mineral products for 1919. The state ranked twenty-eighth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total value of products of all mines and quarries in New Jersey in 1919 was \$9,308,902, an increase of 11.5 per cent over the amount reported at the census of 1909. This increase and the increases in capital, wages, cost of supplies and materials and fuel and power, as shown in Table 1, are largely due to general price increases during the census interval and are, therefore, not a measure of growth in mining. There is, on the contrary, a decline indicated by the decrease in number of enterprises and in number of individual mines and quarries operated, and in the average number of wage earners employed.

The mining industries reported in New Jersey in 1919, classified according to principal products and listed in order of value of products, were zinc, iron ore, basalt or trap rock, clay, limestone, granite, and sandstone.

Statistics for the leading industries, zinc and iron ore, are not shown separately in order to avoid disclosure of individual operations, but are shown as "All other industries" in Table 2, which ranks the industries that can be shown according to value of products. Seven of the 97 mining enterprises were engaged in the zinc and iron-ore-mining industries, and together employed 60 per cent of the total number of wage earners and contributed 57.1 per cent of the total value of mineral products of the state.

The industries next in importance after metal mining were the quarrying of basalt or trap rock and the mining of clay, and in both of these industries New Jersey ranked second in the United States. The first included 36 enterprises, which employed 13.9 per cent of the total number of wage earners and reported products valued at \$1,928,025, or 20.7 per cent of the total for the state. The second included 35 enterprises, employed 19 per cent of the total

number of wage earners, and reported products valued at \$1,482,359, or 15.9 per cent of the total for the state.

The quarry industries, which included production of basalt or trap rock, limestone, granite, and sandstone, comprised 55 out of a total of 97 enterprises in the state, employed 21 per cent of the total number of wage earners, and reported products valued at \$2,515,057, or 27 per cent of the total for the state.

The mining enterprises in New Jersey in 1919 are classified according to character of operating organization in Table 3, which shows, for the state as a whole and for the industries presented separately, that corporations conducted the majority of operations and were preponderant as to number of wage earners employed and total value of products reported.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises, 1 employed no wage earners, and 88 employed fewer than 101 each. On the other hand, 8 enterprises had more than 100 wage earners each and employed practically two-thirds of the total number. These larger enterprises were in the zinc, iron-ore, and clay-mining industries.

Table 5 shows that in less than one-third of the enterprises but for 68.6 per cent of the total number of wage earners the hours of labor were 44 to 53 per week, while in more than two-thirds of the enterprises but for only 31.4 per cent of the wage earners the hours were 54 to 62 per week. In the clay-mining and quarrying industries the longer hours and the 6-day week prevailed with a 10-hour day in clay mining and, as a rule, a 9-hour day in quarrying. In the zinc and iron-ore-mining industries shorter hours with an 8-hour day and 6-day week prevailed.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

## MINES AND QUARRIES—NEW JERSEY.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	97	131	-26.0	Principal expenses: Salaries..... Wages..... Contract work..... Supplies and materials..... Fuel and power..... Royalties and rents..... Taxes..... Value of products.....			
Number of mines and quarries.....	102	151	-32.5		\$726,550	\$263,181	176.1
Persons engaged.....	5,029	6,690	-24.8		5,392,681	2,801,066	92.5
Proprietors and firm members, total.....	40	96			57,948	44,489	30.3
Number performing manual labor in or about the mines and quarries.....	20	14			2,194,539	674,962	225.1
Salariat employees.....	413	279	48.0		719,938	319,329	125.5
Wage earners (average number).....	4,576	6,315	-27.5		276,555	101,026	173.7
Power used (horsepower).....	33,901	18,048	87.8		371,785	47,354	685.1
Capital.....	\$16,905,356	\$8,613,668	96.3				
					9,308,902	8,347,501	11.5

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	97	4,576	100.0	\$9,308,902	100.0	Limestone.....	10	258	5.6	\$459,059	4.9
Basalt.....	36	637	13.9	1,928,025	20.7	Granite.....	4	48	1.0	81,198	0.9
Clay.....	35	868	19.0	1,482,359	15.9	Sandstone.....	5	20	0.4	46,775	0.5
						All other industries <sup>1</sup> .....	7	2,745	60.0	5,311,496	57.1

<sup>1</sup> Includes enterprises in industries as follows: Iron ore, 5; zinc, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	97	4,576	\$9,308,902	\$95,968	100.0	100.0	100.0
Corporation.....	60	4,224	8,567,640	142,794	61.9	92.3	92.0
Individual.....	34	342	719,412	21,159	35.1	7.5	7.7
Firm.....	3	10	21,850	7,288	3.1	0.2	0.2
BASALT.....	36	637	1,928,025	53,556	100.0	100.0	100.0
Corporation.....	23	540	1,665,957	72,433	63.9	84.8	86.4
Individual <sup>1</sup> .....	13	97	262,068	20,159	36.1	15.2	13.6
CLAY.....	35	868	1,482,359	42,353	100.0	100.0	100.0
Corporation.....	19	687	1,106,225	58,222	54.3	79.1	74.6
Individual <sup>1</sup> .....	16	181	376,134	23,508	45.7	30.9	25.4
LIMESTONE, GRANITE, AND SANDSTONE.....	19	326	587,082	30,896	100.0	100.0	100.0
Corporation.....	11	252	483,972	43,997	57.9	77.3	82.4
Individual <sup>1</sup> .....	8	74	103,060	12,882	42.1	22.7	17.6

<sup>1</sup> Includes 1 firm.

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TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	97	100.0	4,576	100.0	BASALT.....	36	100.0	637	100.0
No wage earners.....	1	1.0	.....	.....	1 to 5.....	10	27.8	41	6.4
1 to 5.....	23	23.7	79	1.7	6 to 20.....	16	44.4	185	29.0
6 to 20.....	41	42.3	449	9.8	21 to 50.....	8	22.2	288	45.2
21 to 50.....	17	17.5	571	12.5	51 to 100.....	2	5.6	123	19.3
51 to 100.....	7	7.2	450	9.8	LIMESTONE, GRANITE, AND SANDSTONE.....	19	100.0	326	100.0
101 to 500.....	7	7.2	1,531	33.5	1 to 5.....	5	26.3	15	4.6
Over 1,000.....	1	1.0	1,496	32.7	6 to 20.....	9	47.4	96	29.4
CLAY.....	35	100.0	968	100.0	21 to 50.....	4	21.1	137	42.0
No wage earners.....	1	2.9	.....	.....	51 to 100.....	1	5.3	78	23.9
1 to 5.....	8	22.9	23	2.6					
6 to 20.....	16	45.7	168	19.4					
21 to 50.....	5	14.3	146	16.8					
51 to 100.....	3	8.6	184	21.2					
101 to 500.....	2	5.7	247	40.0					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—				INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—			
	Enterprises.	Wage earners.	44 to 53.		54 to 62.			Enterprises.	Wage earners.	44 to 53.		54 to 62.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.				Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries.....	196	4,576	27	3,141	60	1,435	Limestone, granite, and sandstone.....	19	326	6	117	13	209
Clay.....	34	968	4	146	30	722	All other industries.....	7	2,745	7	2,745	.....	.....
Basalt.....	36	637	10	133	26	504							

<sup>1</sup> Exclusive of 1 enterprise in the clay industry employing no wage earners.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	4,576	4,704	4,592	4,647	4,763	4,526	4,168	4,713	4,741	4,790	4,678	4,328	4,278	87.1
Clay.....	968	611	599	595	917	1,075	1,057	1,105	1,114	1,129	934	634	645	52.7
Basalt.....	637	259	358	385	578	750	796	808	779	779	764	715	579	43.6
Limestone.....	258	299	288	276	237	222	236	242	258	255	266	253	264	71.2
Granite.....	48	27	28	51	48	48	35	35	35	37	31	79	72	33.3
Sandstone.....	20	7	7	7	29	29	29	29	29	29	22	11	11	23.3
All other industries.....	2,745	3,401	3,318	3,333	2,953	2,401	2,009	2,494	2,526	2,551	2,611	2,636	2,707	59.1

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.						
	Total.	Basalt.	Clay.	Limestone.	Granite.	Sandstone.	All other. <sup>1</sup>
Number of enterprises.....	97	36	35	10	4	5	7
Number of mines and quarries.....	102	36	35	10	6	6	9
Capital.....	\$16,905,356	\$1,373,890	\$2,840,074	\$1,536,492	\$86,900	\$25,000	\$10,993,000
Principal expenses:							
Salaries and wages—							
Officers.....	\$166,463	\$49,515	\$69,153	\$8,625	\$2,500		\$36,670
Superintendents and managers.....	\$197,366	\$45,619	\$48,597	\$11,298	\$900	\$1,300	\$89,642
Technical employees.....	\$112,902	\$3,900	\$2,470				\$106,532
Clerks.....	\$249,829	\$31,441	\$27,435	\$3,956			\$186,997
Wage earners.....	\$5,392,961	\$759,006	\$867,986	\$255,293	\$42,531	\$27,209	\$3,420,836
Supplies and materials.....	\$2,194,339	\$427,546	\$118,283	\$109,198	\$6,480	\$1,218	\$1,531,504
Fuel.....	\$621,384	\$142,358	\$51,227	\$37,630	\$5,560	\$3,500	\$381,359
Power.....	\$98,364	\$10,420	\$978	\$480			\$86,476
Royalties and rents.....	\$276,355	\$90,954	\$11,008	\$14,053	\$2,242	\$2,000	\$156,298
Taxes.....	\$371,785	\$20,819	\$38,256	\$8,835	\$495	\$434	\$302,926
Contract work.....	\$57,048	\$19,562	\$14,658	\$330			\$23,398
Expenditures for development (included in the above items).....	\$831,985	\$25,995		\$8,399			\$797,591
Value of products.....	\$9,308,902	\$1,928,025	\$1,482,359	\$459,059	\$81,198	\$46,775	\$5,311,486
Persons engaged in industry.....	5,029	727	662	273	52	26	2,939
Proprietors and firm members (total).....	40	14	17	2	2	5	
Number performing manual labor.....	20	7	11		1	1	
Salaried officers.....	53	20	24	2	1		6
Superintendents and managers.....	80	26	18	6		1	28
Technical employees.....	57	2	2		1		53
Clerks, etc.....	223	28	33	5			157
Wage earners (average number).....	4,576	637	868	253	48	20	2,745
Wage earners by occupation (Dec. 15):							
Above ground (total).....	3,533	721	1,107	272	72	36	1,325
Below ground (total).....	1,378		6				1,372
Foremen, shift bosses, etc.—							
Above ground.....	124	26	19	11	2	4	62
Below ground.....	48						48
Enginemen, hoistmen, electricians, mechanics, etc.—							
Above ground.....	545	91	38	40	5	1	370
Below ground.....	60						60
Miners, quarrymen, and drillmen, including their helpers—							
Above ground.....	429	221	56	84	29	5	34
Below ground.....	693						693
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—							
Above ground.....	130	1	25	10	3		91
Below ground.....	391						391
Muckers, loaders, laborers, and others not classified—							
Above ground.....	1,885	374	960	127	33	23	368
Below ground.....	186		6				180
Wage earners employed in mills and beneficiating plants—							
Above ground.....	420	8	9			3	400
Number of females included in wage earners reported above—							
Above ground.....	1						1
Mineral land operated..... acres.....	27,006	1,445	6,099	428	250	67	18,717
Land controlled, total..... acres.....	37,852	1,689	6,626	497	305	108	28,627
Mineral land owned.....	19,885	981	5,600	325	225	37	12,717
Mineral land leased.....	7,121	464	499	103	25	30	6,000
Timber and other lands owned and leased.....	10,846	244	527	69	55	41	9,910
Power used: Aggregate horsepower.....	33,901	6,340	2,817	1,372	195	89	23,088
Prime movers (horsepower, total).....	26,847	5,298	2,683	1,337	195	89	17,245
Steam engines—							
Number.....	137	51	38	9	3	4	32
Horsepower.....	16,357	5,011	2,435	537	195	74	8,105
Steam turbines—							
Number.....	7	1		1			5
Horsepower.....	10,065	125		800			9,140
Internal-combustion engines—							
Number.....	35	14	20			1	
Horsepower.....	425	162	248			15	
Purchased power (horsepower, total).....	7,054	1,042	134	35			5,843
Electric motors operated by purchased current—							
Number.....	104	20	7	1			76
Horsepower.....	7,054	1,042	134	35			5,843
Electric motors run by current generated by enterprise using:							
Number.....	213			18			195
Horsepower.....	8,742			634			8,108
Fuel used:							
Coal, anthracite..... tons, 2,240 pounds.....	57,267	2,041	8	180			55,058
Coal, bituminous..... tons, 2,000 pounds.....	62,486	22,058	13,498	7,579	826	519	18,006
Coke..... tons, 2,000 pounds.....	151			139			12
Wood..... cords.....	21			21			
Fuel oils..... barrels.....	18,880	4	115	68			18,995
Gasoline and other volatile oils..... barrels.....	618	228	200	102		10	78

<sup>1</sup> Includes enterprises as follows: Iron ore, 5; zinc, 2.<sup>2</sup> Includes 1 wage earner under 16 years of age.

## NEW MEXICO.

New Mexico, which ranks fourth among the states in size (land area 122,503 square miles) and forty-fourth in population (360,350 in 1920), ranked twenty-fourth in the value of mineral products for 1919. The state ranked twenty-fourth in the total number of persons engaged and twenty-third in the average number of wage earners employed in the mining industries.

The gross amount received for products by operators of all mines and quarries and wells in New Mexico in 1919 was \$18,872,560. Deducting from this amount a duplication of \$9,506, the value of gold and silver ores sold in 1919 by some producers and further treated and reported by others, leaves \$18,863,054, the net value of minerals produced in 1919. This was an increase of 237.6 per cent over the corresponding amount for 1909 (\$5,587,744). The amount stated as total value of products in 1919 includes, in addition to the value of the mineral product indicated by the industry designation, \$45,308, the aggregate received by operators of mining enterprises for custom milling, power sold, and for miscellaneous work or services for other enterprises.

A decrease in the number of enterprises and in the number of individual mines and quarries operated in New Mexico is shown by Table 1. While such decreases were undoubtedly actual they were due to the suspension of small operations. Increases in the number of wage earners employed and in the capital invested are more significant and indicate progress in the mining industries. The increases in the principal expenses and in value of products, although due to some extent to general price increases, show substantial growth in mining operations. The large increase in taxes shown is due to the addition of Federal income taxes since 1909.

The mining industries reported for 1919, ranked according to value of products, were bituminous coal, copper, gold and silver (lode mining), iron ore, lead and zinc, gypsum, manganese, molybdenum, silica, fluor-spar, mica, clay, gold (placer mines), and petroleum. The industries for which the statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The value of products of the coal-mining industry in New Mexico, in 1919, was \$9,905,541, which was 52.5 per cent of the value of products of all industries in the state. Colfax and McKinley Counties produced most of the coal, while Lincoln, Rio Arriba, San Juan, Santa Fe, and Socorro Counties were also productive. The statistics for bituminous coal min-

ing includes, for convenience and to avoid disclosure of individual operations, the data for a mining enterprise operating three anthracite mines.

The mining of gold, silver, copper, lead, and zinc ores was second in importance in the state as measured by value of products. Metal-mining operations were reported from seven counties, of which Grant was by far the most productive. The values reported for products of the metal mining industries are based on the net amount received by the mine and mill operators for ore, concentrates, and bullion marketed, or the estimated equivalent of sales values when such products were to be further treated by the producer. The values reported are not the values of the metals produced or recoverable from these materials by smelting and refining.

Some mining work was done in New Mexico on properties which were not productive during the census year. Eighteen enterprises were reported thus engaged: 17, in developing gold, silver, copper, lead or zinc mines; and 1, a manganese mine. These enterprises, with combined capital of \$3,711,293, employed 116 wage earners and expended \$296,233 for development. These figures constitute only a small part of the aggregate number of wage earners and expenditures reported.

The extent of control of mining operations by corporate organizations is brought out by Table 3. Of all the enterprises, 51.8 per cent were corporations and these employed 95.1 per cent of the wage earners and reported 97.3 per cent of the value of products of the mining industries. Two-thirds of the enterprises in the coal-mining industry were corporations, and these reported practically all of the wage earners and value of products for the coal industry. In the gold, silver, copper, lead and zinc mining industries 46.5 per cent, a somewhat smaller share of the number of enterprises, were corporate in form of organization, but these enterprises dominated the industry, reporting 95.7 per cent and 98 per cent, respectively, of the number of wage earners and value of products.

The relatively large number of small enterprises, as measured by the number of wage earners employed per enterprise, is shown by Table 4. Of the total number of enterprises, 7.1 per cent had no wage earners and 71.8 per cent having fewer than 51 reported only 9.7 per cent of the total number of wage earners. On the other hand, 11 enterprises, or 13 per cent of the total number, employing more than 100 wage earners each, reported 83 per cent of the

entire number for the state. The 5 enterprises employing more than 500 wage earners each are in the bituminous coal and lode mining industries and these employed approximately 65 per cent of all the wage earners.

Table 5 shows that the prevailing hours of labor in 46 enterprises, or 58.2 per cent of the 79 enterprises employing wage earners, were 44 to 53 per week, and in 32, or 40.5 per cent, 54 to 62 hours per week. In both these classes of enterprises, together employing 80.3 per cent of the total number of wage earners in all mining industries, the prevailing hours per day were 8, but most of those in the coal-mining industry were in operation 6 days in the week, while

a majority in the metal-mining industries operated 7 days per week.

The statistics for wage earners given in Table 6, showing changes in the number employed from month to month, reflect conditions prevailing in the industries during the census year. The minimum number employed in November is due to the strike in the coal industry resulting in the smallest number being reported in November rather than, as usual, during the summer.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	85	98		Capital.....	\$93,994,713	\$40,125,674	134.3
Number of mines and quarries.....	133	285	-53.3	Principal expenses:			
Number of petroleum wells.....	1			Salaries.....	1,151,046	445,124	158.6
Persons engaged.....	7,607	5,537	37.4	Wages.....	10,496,857	3,528,355	197.3
Proprietors and firm members, total.....	69	86		Contract work.....	131,506	132,835	-0.8
Number performing manual labor in or about the mines and quarries.....	29	39		Supplies and materials.....	3,839,454	806,487	382.9
Salaried employees.....	438	344	27.3	Fuel and power.....	1,361,210	208,062	570.3
Wage earners (average number).....	7,100	5,107	39.0	Royalties and rents.....	181,504	78,995	128.3
Power used (horsepower).....	59,876	16,042	273.2	Taxes.....	835,920	40,410	1,968.6
				Value of products.....	18,872,560	5,587,744	237.7

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

<sup>2</sup> Includes cost of ore purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	85	7,100	100.0	\$18,872,560	100.0	Gold, silver, copper, lead, and zinc, lode mines.....	43	3,067	43.1	\$8,135,067	43.1
Coal, bituminous.....	21	3,564	50.2	9,905,541	52.5	All other industries <sup>1</sup> .....	21	479	6.7	831,952	4.4

<sup>1</sup> Includes enterprises in industries as follows: Clay, 1; fluorspar, 7; gold, placer mines, 1; gypsum, 1; iron ore, 5; manganese, 1; mica, 2; molybdenum, 1; petroleum, 1; silica, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	85	7,100	\$18,872,560	\$222,030	100.0	100.0	100.0
Corporation.....	44	6,750	18,367,090	417,434	51.8	95.1	97.3
Individual.....	22	162	302,494	13,780	25.9	2.3	1.6
Firm.....	19	188	202,976	10,683	22.4	2.6	1.1
COAL, BITUMINOUS.....	21	3,564	9,905,541	471,692	100.0	100.0	100.0
Corporation.....	14	3,444	9,069,144	690,653	66.7	96.6	97.6
Individual <sup>1</sup> .....	7	120	236,397	33,771	33.3	3.4	2.4
GOLD, SILVER, COPPER, LEAD, AND ZINC, LODGE MINES.....	43	3,067	8,135,067	189,188	100.0	100.0	100.0
Corporation.....	20	2,925	7,969,802	396,490	46.5	95.7	95.0
Individual.....	13	58	94,755	7,289	30.2	1.9	1.2
Firm.....	10	74	70,510	7,051	23.3	2.4	0.9

<sup>1</sup> Includes 2 firms.

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TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	85	100.0	7,100	100.0	GOLD, SILVER, COPPER, LEAD, AND ZINC, LODE MINES.....	43	100.0	3,057	100.0
No wage earners.....	6	7.1	.....	.....	No wage earners.....	3	7.0	.....	.....
1 to 5.....	27	31.8	64	0.9	1 to 5.....	14	32.6	84	1.1
6 to 20.....	24	28.2	286	4.0	6 to 20.....	14	32.6	155	5.1
21 to 50.....	10	11.8	344	4.8	21 to 50.....	5	11.6	176	5.8
51 to 100.....	7	8.2	514	7.2	51 to 100.....	2	4.7	150	5.1
101 to 500.....	6	7.1	1,324	18.7	101 to 500.....	3	7.0	454	14.9
501 to 1,000.....	4	4.7	3,174	44.7	501 to 1,000.....	1	2.3	688	22.5
Over 1,000.....	1	1.2	1,394	19.6	Over 1,000.....	1	2.3	1,394	45.6
COAL, BITUMINOUS.....	21	100.0	3,564	100.0					
No wage earners.....	1	4.8	.....	.....					
1 to 5.....	4	19.0	6	0.2					
6 to 20.....	5	23.8	66	1.9					
21 to 50.....	2	9.5	48	1.3					
51 to 100.....	4	19.0	302	8.5					
101 to 500.....	2	9.5	658	18.4					
501 to 1,000.....	3	14.3	2,486	69.8					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—					
	Enterprises.	Wage earners.	44 to 53.		54 to 62.		63 to 71.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries.....	179	7,100	46	4,604	32	1,102	1	1,394
Coal, bituminous.....	20	3,564	19	3,556	1	8	.....	.....
Gold, silver, copper, lead, and zinc, lode mines.....	40	3,057	17	914	22	749	1	1,394
All other industries.....	19	479	10	134	9	345	.....	.....

<sup>1</sup> Exclusive of 6 enterprises employing no wage earners in industries as follows: Clay, 1; coal, bituminous, 1; gold, silver, copper, lead, and zinc, 3; petroleum, 1.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	7,216	<b>8,238</b>	7,669	7,527	7,321	7,133	6,971	6,602	7,227	7,234	7,097	<i>6,807</i>	6,988	79.1
Producing enterprises.....	7,100	<b>8,152</b>	7,584	7,437	7,236	7,013	6,830	6,561	7,081	7,102	6,975	<i>6,580</i>	6,840	78.3
Coal, bituminous.....	3,564	<b>4,089</b>	3,840	4,000	3,773	3,541	3,364	3,127	3,455	3,395	3,541	<i>3,287</i>	3,716	74.1
Gold, silver, copper, lead, and zinc, lode mines.....	3,057	<b>3,547</b>	3,185	<i>3,848</i>	2,854	2,871	2,886	2,954	3,086	3,146	3,196	<i>3,196</i>	2,915	80.2
All other industries.....	479	576	659	501	<b>608</b>	601	586	490	543	561	238	<i>196</i>	209	32.0
Nonproducing enterprises.....	116	74	85	90	85	120	135	131	143	132	122	127	<b>148</b>	50.0



TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.				Non-producing enterprises. <sup>3</sup>
		Total.	Coal, bituminous.	Gold, silver, copper, lead, and zinc, lode mines.	All other. <sup>1</sup>	
Number of enterprises.....	103	85	21	43	21	18
Number of mines and quarries.....	152	133	64	46	23	19
Number of petroleum wells.....	1	1			1	
Capital.....	\$97,706,006	\$93,994,713	\$40,197,139	\$52,426,329	\$1,371,245	\$3,711,293
Principal expenses:						
Salaries and wages—						
Officers.....	\$150,683	\$132,305	\$90,728	\$35,394	\$6,193	\$18,359
Superintendents and managers.....	\$403,842	\$381,837	\$168,851	\$180,273	\$32,713	\$22,005
Technical employees.....	\$225,418	\$219,107	\$63,861	\$151,647	\$3,599	\$6,311
Clerks, etc.....	\$422,384	\$417,797	\$194,851	\$205,937	\$17,009	\$4,567
Wage earners.....	\$10,710,390	\$10,493,857	\$5,641,744	\$4,362,462	\$489,651	\$216,533
Supplies and materials.....	\$3,968,435	\$3,879,943	\$975,742	\$2,723,080	\$181,126	\$83,487
Cost of ore purchased.....	\$9,108	\$9,506		\$9,506		
Fuel.....	\$1,320,285	\$1,292,260	\$138,254	\$1,108,827	\$47,179	\$28,075
Power.....	\$99,316	\$98,950	\$67,201	\$1,749		\$366
Royalties and rents.....	\$183,143	\$181,534	\$97,167	\$74,145	\$10,192	\$1,939
Taxes.....	\$838,481	\$835,920	\$335,575	\$493,115	\$7,230	\$2,761
Contract work.....	\$133,035	\$131,536	\$102,859	\$17,355	\$11,292	\$1,529
Expenditures for development (included in the above items).....	\$3,517,694	\$3,221,461	\$120,839	\$3,023,308	\$77,314	\$296,233
Value of products.....	\$18,872,560	\$18,872,560	\$9,905,541	\$8,135,067	\$831,952	
Persons engaged in industry.....	7,760	7,607	3,774	3,301	532	153
Proprietors and firm members (total).....	72	69	10	39	20	3
Number performing manual labor.....	31	29	3	19	7	2
Salaries officers.....	27	13	4	3	7	3
Superintendents and managers.....	119	108	54	38	16	11
Technical employees.....	113	105	40	62	3	8
Clerks, etc.....	213	205	93	101	11	8
Wage earners (average number).....	7,216	7,100	3,564	3,057	479	116
Wage earners by occupation (Dec. 15):						
Above ground (total).....	2,919	2,812	815	1,684	313	107
Below ground (total).....	4,806	4,678	2,893	1,359	426	128
Foremen, shift bosses, etc.—						
Above ground.....	74	65	21	26	8	9
Below ground.....	138	124	61	52	11	12
Enginemen, hoistmen, electricians, mechanics, etc.—						
Above ground.....	887	840	369	439	42	47
Below ground.....	243	224	121	97	6	19
Miners, quarrymen, and drillmen, including their helpers—						
Above ground.....	126	117		68	49	9
Below ground.....	2,775	2,718	1,974	523	221	57
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—						
Above ground.....	264	259	41	208	10	5
Below ground.....	820	793	604	156	33	27
Muckers, loaders, laborers, and others not classified—						
Above ground.....	833	796	289	359	148	37
Below ground.....	832	819	138	531	155	13
Wage earners employed in mills and beneficiating plants—						
Above ground.....	735	735	95	584	56	
Number of females included in wage earners reported above—						
Above ground.....	2	1	1			1
Number of wage earners under 16 years of age, included in those reported above—						
Above ground.....	4	4		1	3	
Mineral and oil land operated..... acres.....	679,256	673,051	641,125	23,012	8,914	6,205
Land controlled, total..... acres.....	718,264	711,871	657,160	45,797	8,914	6,393
Mineral and oil land owned.....	647,041	642,019	614,619	19,370	8,030	5,022
Mineral land leased.....	32,275	31,092	26,506	3,702	884	1,183
Timber and other lands owned and leased.....	38,948	38,760	16,035	22,725		188
Power used: Aggregate horsepower.....	61,383	59,876	18,063	40,199	1,614	1,507
Prime movers (horsepower, total).....	56,468	55,081	13,333	40,084	1,614	1,437
Steam engines—						
Number.....	89	66	15	41	10	23
Horsepower.....	23,774	22,579	2,745	18,904	930	1,196
Steam turbines—						
Number.....	55	55	11	44		
Horsepower.....	22,779	22,779	10,543	12,231		
Internal-combustion engines—						
Number.....	111	94	2	80	12	17
Horsepower.....	9,895	9,653	40	8,949	604	242
Water wheels and turbines—						
Number.....	1	1			1	
Horsepower.....	20	20			20	
Purchased power (horsepower, total).....	4,915	4,845	4,730	115		70
Electric motors operated by purchased current—						
Number.....	131	130	125	5		1
Horsepower.....	4,915	4,845	4,730	115		70
Electric motors run by current generated by enterprise using:						
Number.....	1,257	1,257	250	1,006	1	
Horsepower.....	24,854	24,854	5,104	19,742	8	
Fuel used:						
Coal, bituminous..... tons, 2,000 pounds.....	235,566	232,846	45,834	182,572	4,440	2,720
Coke..... tons, 2,000 pounds.....	62	62		62		
Wood..... cords.....	861	837		127	260	474
Fuel oils..... barrels.....	50,849	50,784		49,154	1,630	65
Gasoline and other volatile oils..... barrels.....	2,082	1,904	14	1,591	299	173

<sup>1</sup> Includes enterprises as follows: Clay, 1; fluor spar, 7; gold, placer mines, 1; gypsum, 1; iron ore, 5; manganese, 1; mica, 2; molybdenum, 1; petroleum, 1; silica, 1.

<sup>2</sup> Includes enterprises as follows: Gold, silver, copper, lead or zinc, 17; manganese, 1.

## NEW YORK.

New York, which ranks twenty-ninth among the states in size (land area 47,654 square miles) and first in population (10,385,227 in 1920), ranked twenty-second in value of mineral products for 1919. The state ranked twenty-third in the total number of persons engaged in the mining industries and twenty-fourth in the average number of wage earners employed.

The gross value of products of all mines, quarries, and wells in New York in 1919 was \$25,131,093 which was an increase of 88.5 per cent over the amount reported at the census of 1909. The value of products for 1919 includes receipts for mineral and other unspecified by-products, for power sold, and work or miscellaneous services for other enterprises. It also includes a duplication of \$2,692,086, the value of natural gas sold by some producers to others who used it as material or resold it and included it in their products. Deducting this duplicated amount leaves as net product for 1919 \$22,439,007, which was an increase of 69.1 per cent over the corresponding amount reported at the census of 1909.

The increase in value of products and the increases in capital, wages, cost of supplies and materials and fuel and power, as shown in Table 1, are largely due to general price increases during the census interval and therefore are not a measure of growth in mining. A decline in mining in 1919 as compared with 1909 is indicated by the decreases in the number of enterprises, individual mines and quarries operated, and average number of wage earners employed.

The mining industries reported in New York in 1919, classified according to principal products and listed in order of value of products, were petroleum and natural gas, iron ore, limestone, gypsum, talc and soapstone, basalt or trap rock, lead and zinc, pyrite, slate, graphite, abrasive materials, sandstone, marble, granite, feldspar, millstones, and clay. The production of salt was an important mineral industry in New York but was not included in the census of mines and quarries. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The principal mineral industry in New York was the production of petroleum and natural gas. The statistics for this industry include the operation of plants engaged in the extraction of gasoline from natural gas, whether such plants were connected with well operations or operated independently. Petroleum and natural-gas enterprises numbered 561, or 80.1 per cent of all mining enterprises in the state. The industry employed 14 per cent of the total number of wage earners and reported products valued at \$9,900,-

894, or 39.4 per cent of the total gross value of products of the state. Petroleum and natural gas were reported from 3 counties along the Pennsylvania state line in the western part of the state, and natural gas only was reported from 10 other western counties.

The industry second in importance on the basis of value of products, but first in the average number of wage earners employed, was the mining of iron ore. Seven enterprises in this industry employed 29.2 per cent of the total number of wage earners and contributed products valued at \$5,264,443, or 20.9 per cent of the total for the state. New York ranked fourth among the states in the value of iron ore produced in 1919.

Limestone ranked third among the mining industries in New York on the basis of value of products and second on average number of wage earners employed, and the state was fourth in the United States in the production of limestone in 1919. Fifty-five enterprises employed 28 per cent of the total number of wage earners and reported products valued at \$4,597,942, or 18.3 per cent of the total for the state. The producing limestone quarries were well distributed over the state; 27 counties reported. The product was used for construction work and in manufacturing industries.

The mining industry fourth in importance in New York in 1919 was the production of gypsum, in which six enterprises employed 6.4 per cent of the total number of wage earners and contributed products valued at \$1,110,463, or 4.4 per cent of the total value of products of the state. In this industry New York ranked first in the United States. The producing enterprises were in Erie, Genesee, Madison, and Monroe Counties.

Thirteen other mineral industries in New York together reported only 17 per cent of the total value of products and on this basis are of relatively minor importance as compared with the principal mining and quarrying industries. In several of these industries, however, which produce materials important industrially, New York ranked high; in value of talc and soapstone, graphite, and abrasive materials (principally garnet and emery) the state was first and in value of pyrite and slate, third.

Operations for the purpose of development of non-productive mineral properties were reported by only one enterprise, therefore, statistics are not presented.

New York mining enterprises in 1919 are classified by character of operating organization in Table 3, which shows that, for the state as a whole, corporations conducted only 20.9 per cent of the total number of enterprises but employed 87.3 per cent of the total number of wage earners, and reported 85.3 per cent

of the total value of products. Ninety per cent of the relatively large number of unincorporated enterprises were in the petroleum and natural-gas industry. In the other industries separately presented corporations were preponderant over any other form of organization in number of enterprises conducted as well as in number of wage earners employed and value of products reported. In two of the important industries, iron ore and gypsum mining, corporations were also preponderant, but data can not be shown without disclosing the operations of one enterprise in each industry conducted by an individual.

The relatively large number of small enterprises as measured by average number of wage earners is shown in Table 4. Nearly one-half of the enterprises reported no wage earners and 363 enterprises, or 51.9 per cent of the total number, had fewer than 101 each. On the other hand, only 16 enterprises, or 2.3 per cent of the total number, had more than 100 wage earners each and employed 55.7 per cent of the total number of wage earners. The larger enterprises were principally in the iron-ore, limestone, and gypsum industries, but the following industries also included one large enterprise each: Abrasive materials, graphite, pyrite, basalt, lead and zinc, petroleum and natural gas. In the petroleum and natural-gas industry 310 enterprises employed no wage earners and 236 enterprises aver-

aged fewer than 2 wage earners each. In this industry only 15 enterprises, or 2.6 per cent of the total enterprises in the state, employed more than 5 wage earners each.

Table 5 shows that in 45.9 per cent of the enterprises employing wage earners and for 49.7 per cent of the total number of wage earners the prevailing hours of labor were 54 to 62 per week. In 30.9 per cent of the enterprises employing wage earners and for 47.9 per cent of the total number of wage earners, the hours of labor were 44 to 53 per week. In the iron-ore mining industry 98 per cent of the wage earners were employed by enterprises where the hours of labor were 44 to 53 per week and the 8-hour day and 6-day week prevailed. Longer hours prevailed for a majority of the wage earners in all other industries shown separately. In the gypsum mining and quarry industries the wage earners generally were employed 10 hours per day and 6 days per week.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the mining industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	700	1,351	-48.2	Capital.....	\$95,446,438	\$45,171,232	111.3
Number of mines and quarries.....	147	752	-80.5	Principal expenses:			
Number of petroleum and natural-gas wells.....	14,188	11,342	25.1	Salaries.....	1,431,601	707,865	102.2
Number of natural-gas gasoline plants.....	6			Wages.....	7,496,781	4,717,595	58.9
Persons engaged.....	7,913	12,232	-35.3	Contract work.....	789,360	513,042	53.9
Proprietors and firm members, total.....	896	2,294	-60.9	Supplies and materials <sup>2</sup> .....	7,416,586	1,962,593	279.2
Number performing manual labor in or about the mines, quarries, and wells.....	202	663	-69.5	Fuel and power.....	1,402,245	585,161	139.6
Salaried employees.....	815	633	28.8	Royalties and rents.....	649,472	465,454	39.6
Wage earners (average number).....	6,202	9,205	-33.3	Taxes.....	804,416	173,989	262.3
Power used (horsepower).....	91,339	101,759	-10.2	Value of products.....	25,131,093	13,334,975	83.6

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes cost of natural gas purchased as material and for resale.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	700	6,202	100.0	\$25,131,093	100.0	Slate.....	9	134	2.2	\$445,027	1.8
Petroleum and natural gas.....	561	868	14.0	9,900,864	39.4	Sandstone.....	23	146	2.4	301,315	1.2
Iron ore.....	7	1,811	29.2	5,264,443	20.9	Marble.....	6	100	1.6	249,286	1.0
Limestone.....	55	1,739	28.0	4,597,942	18.3	Granite.....	7	101	1.6	173,404	0.7
Gypsum.....	6	400	6.4	1,110,463	4.4	Millstones.....	6	1	( <sup>1</sup> )	7,827	( <sup>1</sup> )
						All other industries <sup>2</sup> .....	21	902	14.6	3,080,492	12.3

<sup>1</sup> Less than one-tenth of 1 per cent.

<sup>2</sup> Includes enterprises in industries as follows: Abrasive materials, 4; basalt, 4; clay, 2; feldspar, 2; graphite, 2; lead and zinc, 1; pyrite, 2; talc and soapstone, 4.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	700	6,202	\$25,131,093	\$35,902	100.0	100.0	100.0
Corporation.....	146	5,414	21,431,650	146,792	20.9	87.3	85.3
Individual.....	183	213	930,905	5,086	26.1	3.4	3.7
Firm.....	243	495	2,045,660	8,418	34.7	8.0	8.1
Other.....	128	80	722,978	5,648	18.3	1.3	2.9
PETROLEUM AND NATURAL GAS.....	561	868	9,900,894	17,649	100.0	100.0	100.0
Corporation.....	61	558	7,179,452	117,696	10.9	64.3	72.5
Individual.....	155	77	663,741	4,282	27.6	8.9	6.7
Firm.....	217	153	1,834,723	6,151	38.7	17.6	13.5
Other.....	128	80	722,978	5,648	22.8	9.2	7.3
LIMESTONE.....	55	1,739	4,597,942	83,599	100.0	100.0	100.0
Corporation.....	36	1,561	4,220,582	117,238	65.5	89.8	91.8
Individual.....	10	36	81,279	8,128	18.2	2.1	1.8
Firm.....	9	142	296,081	32,868	16.4	8.2	6.4
SLATE.....	9	134	445,027	49,447	100.0	100.0	100.0
Corporation.....	5	111	397,183	79,437	55.6	82.8	89.2
Firm.....	4	23	47,844	11,961	44.4	17.2	10.8
SANDSTONE.....	22	146	301,315	13,696	100.0	100.0	100.0
Corporation.....	8	88	186,124	23,200	36.4	60.3	61.8
Individual.....	7	29	66,140	9,449	31.8	19.9	21.9
Firm.....	7	29	49,051	7,007	31.8	19.9	16.3

<sup>1</sup> Includes 1 individual.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	700	100.0	6,202	100.0	GYPSUM.....	6	100.0	400	100.0
No wage earners.....	321	45.9			1 to 5.....	1	16.7	1	0.2
1 to 5.....	268	38.3	421	6.8	6 to 20.....	1	16.7	15	3.8
6 to 20.....	59	8.4	671	10.8	21 to 50.....	1	16.7	40	10.0
21 to 50.....	23	3.3	773	12.5	51 to 100.....	1	16.7	59	14.8
51 to 100.....	13	1.9	883	14.2	101 to 500.....	2	33.3	285	71.2
101 to 500.....	14	2.0	2,122	34.2	SANDSTONE.....	22	100.0	146	100.0
501 to 1,000.....	2	0.3	1,332	21.5	No wage earners.....	2	9.1		
IRON ORE.....	7	100.0	1,811	100.0	1 to 5.....	10	45.5	16	11.0
21 to 50.....	2	28.6	74	4.1	6 to 20.....	9	40.9	109	74.7
101 to 500.....	3	42.9	405	22.4	21 to 50.....	1	4.5	21	14.4
501 to 1,000.....	2	28.6	1,332	73.6	SLATE.....	9	100.0	184	100.0
LIMESTONE.....	55	100.0	1,739	100.0	1 to 5.....	3	33.3	9	6.7
No wage earners.....	2	3.6			6 to 20.....	3	33.3	25	19.4
1 to 5.....	10	18.2	25	1.4	21 to 50.....	3	33.3	99	73.9
6 to 20.....	24	43.6	276	15.9	GRANITE.....	7	100.0	101	100.0
21 to 50.....	8	14.5	287	16.5	1 to 5.....	3	42.9	8	7.9
51 to 100.....	8	14.5	560	32.2	6 to 20.....	2	28.6	24	23.8
101 to 500.....	3	5.5	591	34.0	21 to 50.....	2	28.6	69	68.8
PETROLEUM AND NATURAL GAS.....	561	100.0	868	100.0	MARBLE.....	6	100.0	100	100.0
No wage earners.....	310	55.3			6 to 20.....	5	83.3	65	65.0
1 to 5.....	236	42.1	351	40.4	21 to 50.....	1	16.7	35	35.0
6 to 20.....	10	1.8	93	10.7					
21 to 50.....	2	0.3	70	8.1					
51 to 100.....	2	0.3	132	15.2					
101 to 500.....	1	0.2	222	25.6					

MINES AND QUARRIES—NEW YORK.

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	1 379	6,202	57	64	13	16	117	2,972	174	3,062	13	39	5	29
Iron ore.....	7	1,811	.....	.....	.....	.....	6	1,774	1	37	.....	.....	.....	.....
Limestone.....	53	1,739	1	6	.....	.....	11	238	41	1,495	.....	.....	.....	.....
Petroleum and natural gas.....	251	868	56	58	13	16	77	207	89	553	12	20	4	9
Gypsum.....	6	400	.....	.....	.....	.....	1	143	5	257	.....	.....	.....	.....
Sandstone.....	20	146	.....	.....	.....	.....	5	15	14	112	1	19	.....	.....
Slate.....	9	134	.....	.....	.....	.....	2	14	7	120	.....	.....	.....	.....
Granite.....	7	101	.....	.....	.....	.....	4	32	3	69	.....	.....	.....	.....
Marble.....	6	100	.....	.....	.....	.....	1	11	5	89	.....	.....	.....	.....
All other industries.....	20	903	.....	.....	.....	.....	10	538	9	345	.....	.....	1	20

<sup>1</sup> Exclusive of 321 enterprises employing no wage earners in industries as follows: Abrasive materials, 2; limestone, 2; millstones, 5; petroleum and natural gas, 310; sandstone, 2.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	6,202	6,180	<i>5,553</i>	5,627	6,040	6,429	6,450	<b>6,690</b>	6,560	6,537	6,474	6,108	5,767	83.0
Iron ore.....	1,811	<b>2,590</b>	2,127	1,953	1,842	1,758	1,740	1,724	1,582	1,587	1,617	<i>1,571</i>	1,632	60.4
Limestone.....	1,739	1,356	<i>1,184</i>	1,409	1,764	2,032	1,955	2,085	<b>2,111</b>	1,989	1,901	1,659	1,423	56.1
Petroleum and natural gas.....	868	827	802	<i>799</i>	891	826	863	<b>934</b>	917	919	905	881	850	84.3
Gypsum.....	400	350	359	378	372	383	366	368	<i>340</i>	435	475	<b>504</b>	470	67.5
Sandstone.....	146	<i>40</i>	55	82	127	174	185	191	205	<b>211</b>	206	188	88	19.0
Slate.....	134	86	78	<i>65</i>	101	122	127	137	160	164	177	191	<b>200</b>	32.5
Granite.....	101	29	<i>26</i>	31	65	126	146	149	<b>158</b>	155	148	104	75	16.5
Marble.....	100	<i>51</i>	68	73	76	77	123	<b>123</b>	125	125	125	118	108	30.8
Millstones.....	1	.....	.....	2	.....	2	2	2	2	2	.....	.....	.....	.....
All other industries.....	902	<b>842</b>	<i>854</i>	842	<i>809</i>	929	943	<b>973</b>	966	950	920	<i>892</i>	912	82.5

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TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Total.	PRODUCING ENTERPRISES.									
		Petroleum and natural gas. <sup>1</sup>	Iron ore.	Lime-stone.	Gypsum.	Slate.	Sand-stone.	Marble.	Granite.	Mill-stones.	All other. <sup>2</sup>
Number of enterprises.....	700	561	7	55	6	9	22	6	7	6	21
Number of mines and quarries.....	147		7	56	6	10	26	6	7	6	23
Number of petroleum and natural-gas wells.....	14,186	14,186									
Number of natural-gas gasoline plants.....	6	6									
Capital.....	\$95,446,438	\$39,799,123	\$35,272,596	\$11,185,460	\$1,559,514	\$461,680	\$534,031	\$416,076	\$439,047	\$1,305	\$5,777,626
Principal expenses:											
Salaries and wages—											
Officers.....	\$400,385	\$88,077	\$61,125	\$138,986	\$13,162		\$10,200	\$7,750	\$3,410		\$79,675
Superintendents and managers.....	\$376,306	\$77,506	\$84,827	\$108,402	\$21,500	\$3,867	\$12,490	\$1,467	\$3,123		\$53,133
Technical employees.....	\$75,356	\$18,213	\$33,410	\$5,793			\$780		\$1,800		\$7,360
Clerks, etc.....	\$579,555	\$265,792	\$130,393	\$78,895	\$35,468	\$1,630	\$7,640	\$6,614	\$2,408		\$50,720
Wage earners.....	\$7,496,781	\$1,087,232	\$2,365,595	\$2,109,671	\$515,650	\$135,826	\$149,061	\$102,097	\$87,661	\$400	\$943,698
Supplies and materials.....	\$4,724,500	\$1,215,807	\$1,484,681	\$1,119,461	\$263,914	\$60,486	\$40,566	\$34,313	\$28,408	\$1,560	\$476,364
Cost of natural gas purchased as material and for resale.....	\$2,692,086	\$2,692,086									
Fuel.....	\$967,027	\$191,476	\$350,522	\$177,672	\$36,719	\$10,289	\$9,320	\$17,340	\$6,388		\$167,351
Power.....	\$435,218		\$118,387	\$159,800	\$47,767	\$25,765	\$2,124	\$4,952	\$5,861		\$70,562
Royalties and rents.....	\$649,472	\$395,666	\$91,960	\$47,125	\$31,946	\$2,206	\$4,065	\$1,282	\$1,449		\$73,873
Taxes.....	\$804,416	\$455,307	\$184,107	\$97,343	\$9,576	\$6,391	\$2,735	\$5,478	\$1,642		\$51,587
Contract work.....	\$789,360	\$617,083	\$44,778	\$8,958		\$3,483	\$117	\$19,263			\$95,673
Expenditures for development (included in the above items).....	\$2,232,809	\$1,219,835	\$922,865	\$19,577		\$1,500	\$5,626				\$63,407
Value of products.....	\$25,181,093	\$9,900,894	\$5,264,443	\$4,597,942	\$1,110,468	\$445,027	\$301,315	\$249,286	\$178,404	\$7,827	\$3,080,492
Persons engaged in industry.....	7,913	2,014	1,943	1,932	446	148	192	115	115	9	999
Proprietors and firm members (total).....	896	810	1	31	1	8	22	1	3	8	11
Number performing manual labor.....	202	178		4			15		1	6	3
Salaries officers.....	144	11	47	5			5		6		20
Superintendents and managers.....	168	40	24	49	10	5	9	2	6		23
Technical employees.....	38	11	17	4			1		3		4
Clerks, etc.....	465	226	79	66	26	1	9	6	1		39
Wage earners (average number).....	6,202	868	1,811	1,739	400	134	146	100	101	1	902
Wage earners by occupation (Dec. 15):											
Above ground (total).....	4,932	889	749	1,801	167	169	204	128	120	1	714
Below ground (total).....	1,484		883		304	40					257
Foremen, shift bosses, etc.—											
Above ground.....	194		24	95	2	11	11	7	5		39
Below ground.....	81		60		8	2					11
Engineers, hoistmen, electricians, mechanics, etc.—											
Above ground.....	1,261	612	150	282	11	23	11	15	7		150
Below ground.....	120		100		18						3
Miners, quarrymen, and drillmen, including their helpers—											
Above ground.....	754		59	440		18	72	48	69		48
Below ground.....	454		254		97	18					85
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—											
Above ground.....	248		22	166	1	6	11	20			22
Below ground.....	157		35		48						74
Muckers, loaders, laborers, and others not classified—											
Above ground.....	1,847	277	321	801	50	45	46	25	13	1	268
Below ground.....	672		434		133	20					85
Wage earners employed in mills and beneficiating plants—											
Above ground.....	628		173	17	108	56	58	13	26		167
Mineral and oil lands operated..... acres.	365,463		20,121	5,304	2,471	448	246	107	301	7	17,728
Land controlled, total..... acres.	484,631	318,730	186,550	6,129	2,471	448	649	358	311	7	18,968
Mineral and oil land owned.....	79,668	58,913	8,461	5,046	759	266	199	97	267	7	5,653
Mineral and oil land leased.....	285,795	259,817	11,660	258	1,712	182	47	10	34		12,075
Timber and other lands owned and leased.....	119,168		116,429	825			403	246	10		1,255
Power used: Aggregate horsepower.....	91,339	30,196	21,172	22,370	1,706	2,022	1,234	495	2,206		9,936
Prime movers (horsepower, total).....	62,426	30,196	13,175	10,243	725	212	91	275	308		5,811
Steam engines—											
Number.....	900	662	24	147	3	5	16	9	16		28
Horsepower.....	30,055	8,907	4,405	9,968	707	212	842	275	808		3,986
Steam turbines—											
Number.....	8		6								2
Horsepower.....	9,730		8,620								1,100
Internal-combustion engines—											
Number.....	1,533	1,509		12	1		10		1		
Horsepower.....	21,726	21,289		275	18		139		5		
Water wheels and turbines—											
Number.....	4		2								2
Horsepower.....	28,913		150								775
Purchased power (horsepower, total).....	28,913		7,997	12,127	981	1,810	253	220	1,400		4,125
Electric motors operated by purchased current—											
Number.....	595		167	237	25	44	6	8	18		90
Horsepower.....	28,913		7,997	12,127	981	1,810	253	220	1,400		4,125
Electric motors run by current generated by enterprise using:											
Number.....	139	4	43	18	41		8				25
Horsepower.....	6,321	10	2,984	1,195	392		238				1,507
Fuel used:											
Coal, anthracite..... tons, 2,240 pounds.....	52,356		43,557	270		100	30	4	15		8,330
Coal, bituminous..... tons, 2,000 pounds.....	82,962	1,243	15,801	34,764	10,585	1,419	2,255	1,028	1,225		13,333
Coal, coke..... tons, 2,000 pounds.....	1,123		670	25	428						
Wood..... cords.....	430		149	261			20				250
Fuel oils..... barrels.....	1,084	1	429	434	3		144	18	5		
Gasoline and other volatile oils..... barrels.....											
Natural gas..... 1,000 cubic feet.....	1,097,257	1,097,257									

<sup>1</sup> Exclusive of a small operation inseparably combined with report on Pennsylvania operations.

<sup>2</sup> Includes enterprises as follows: Abrasive materials, 4; basalt, 4; clay, 2; feldspar, 2; graphite, 2; lead and zinc, 1; pyrite, 2; talc and soapstone, 4.

## NORTH CAROLINA.

North Carolina, which ranks twenty-seventh among the states in size (land area 48,740 square miles) and fourteenth in population (2,559,123 in 1920), ranked thirty-eighth in value of mineral products in 1919. The state ranked thirty-sixth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total value of products of all mines and quarries in North Carolina in 1919 was \$2,736,543, which includes a small amount received for mineral by-products and for work or miscellaneous services for other enterprises. This figure is an increase of 101.4 per cent as compared with the value of products reported at the census of 1909. This increase and the increases in wages, cost of supplies and materials and fuel and power, shown by Table 1, are largely due to general price increases during the census interval and are therefore not a measure of progress in mining. A decline is indicated by the decreases in the number of individual mines and quarries operated, in the average number of wage earners employed, and also by the very large decrease in capital invested.

The mining industries reported in North Carolina for 1919, classified by principal products and listed in order of value of products, were granite, mica, iron ore, clay, feldspar, limestone, talc and soapstone, millstones, bituminous coal, silica (quartz), asbestos, sandstone, and barytes. In addition to the products indicated by the industry designations, one clay and three feldspar enterprises produced some mica as a by-product, and one silica enterprise produced a small amount of talc. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mineral industry in North Carolina in 1919 was granite quarrying. This industry included 16 out of a total of 102 enterprises in the state, employed 50.7 per cent of the total number of wage earners, and reported products valued at \$1,576,250, or 57.6 per cent of the total value of products. North Carolina ranked third among the states in the granite industry.

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The industry second in importance in North Carolina was mica mining, in which North Carolina outranked all other states. Feldspar was one of the important products and the state ranked second in the United States in the mining of this mineral. These closely allied industries, mica and feldspar, in 1919 embraced 59 of the mining enterprises, employed 23.2 per cent of the total number of wage earners, and reported 18.4 per cent of the total value of products. Among the minor industries in the state which are important are the millstones and asbestos-mining industries in which North Carolina ranked, respectively, first and third in the United States in 1919.

Table 3 classifies the mining enterprises according to character of the operating organizations, and shows that although corporations were outnumbered by other forms of organization, they conducted the larger enterprises, employed 86.7 per cent of the total number of wage earners, and reported 84.4 per cent of the total value of products.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the 102 mining enterprises in North Carolina all except 3 were small, had no wage earners or employed fewer than 101 each. These small enterprises which reported wage earners employed 59 per cent of the 1,890 wage earners in the state. The larger enterprises were in the granite and iron-ore-mining industries.

Table 5 shows that in a majority of enterprises and for 58.7 per cent of the total number of wage earners the prevailing hours of labor were 54 to 62 per week. The 10-hour day and 6-day week prevailed in all important industries.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	102	118	-13.6	Capital.....	\$2,260,434	\$5,965,112	-62.4
Number of mines and quarries.....	106	130	-18.5	Principal expenses:			
Persons engaged.....	2,108	2,484	-15.1	Salaries.....	199,612	123,042	62.2
Proprietors and firm members, total.....	90	165	-45.5	Wages.....	1,489,062	862,762	72.6
Number performing manual labor in or about the mines and quarries.....	36	63	.....	Contract work.....	5,745	37,386	-84.6
Salaried employees.....	128	104	23.1	Supplies and materials.....	467,460	152,714	206.1
Wage earners (average number).....	1,890	2,215	-14.7	Fuel and power.....	220,731	103,319	113.6
Power used (horsepower).....	5,039	6,062	-16.9	Royalties and rents.....	36,071	20,212	78.5
				Taxes.....	21,121	7,565	179.2
				Value of products.....	2,736,543	1,358,617	101.4

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	102	1,890	100.0	\$2,736,543	100.0	Feldspar.....	10	164	8.7	114,169	4.2
Granite.....	16	959	50.7	1,576,260	57.6	Talc and soapstone.....	3	74	3.9	72,027	2.6
Mica.....	49	274	14.5	389,442	14.2	Millstones.....	3	18	1.0	30,775	1.1
						All other industries <sup>1</sup> .....	21	401	21.2	553,890	20.2

<sup>1</sup> Includes enterprises in industries as follows: Asbestos, 2; barytes, 1; clay, 6; coal, bituminous, 1; iron ore, 6; limestone, 2; sandstone, 1; silica, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	102	1,890	\$2,736,543	\$26,839	100.0	100.0	100.0
Corporation.....	40	1,639	2,310,644	57,766	39.2	86.7	84.4
Individual.....	40	134	218,075	5,452	39.2	7.1	8.0
Firm.....	22	117	207,824	9,447	21.6	6.2	7.6
GRANITE.....	16	959	1,576,260	98,516	100.0	100.0	100.0
Corporation.....	10	935	1,517,880	151,785	62.5	97.5	96.3
Individual.....	3	20	48,400	16,133	18.8	2.1	3.1
Firm.....	3	4	10,000	3,333	18.8	0.4	0.6
MICA.....	49	274	389,442	7,948	100.0	100.0	100.0
Corporation.....	8	131	168,011	19,751	16.3	47.8	40.6
Individual.....	29	64	94,882	3,272	59.2	23.4	24.4
Firm.....	12	79	136,549	11,379	24.5	28.8	35.1
FELDSPAR.....	10	164	114,169	11,416	100.0	100.0	100.0
Corporation.....	6	127	64,886	10,814	60.0	77.4	56.8
Individual.....	4	37	49,273	12,318	40.0	22.6	43.2
TALC AND SOAPSTONE.....	3	74	72,027	24,009	100.0	100.0	100.0
Corporation.....	3	74	72,027	24,009	100.0	100.0	100.0
MILLSTONES.....	3	18	30,775	10,258	100.0	100.0	100.0
Firm <sup>1</sup> .....	3	18	30,775	10,258	100.0	100.0	100.0

<sup>1</sup> Includes 1 individual.



## MINES AND QUARRIES—NORTH CAROLINA.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	102	100.0	1,890	100.0	Mica.....	49	100.0	274	100.0
No wage earners.....	6	5.9			No wage earners.....	5	10.2		
1 to 5.....	51	50.0	98	5.2	1 to 5.....	33	67.3	56	20.4
6 to 20.....	22	21.6	253	13.4	6 to 20.....	7	14.3	67	24.5
21 to 50.....	15	14.7	431	22.8	21 to 50.....	3	6.1	70	25.5
51 to 100.....	5	4.9	333	17.6	51 to 100.....	1	2.0	81	29.6
101 to 500.....	3	2.9	775	41.0					
GRANITE.....	16	100.0	959	100.0	FELDSPAR.....	10	100.0	164	100.0
No wage earners.....	1	6.3			1 to 5.....	3	30.0	6	3.7
1 to 5.....	4	25.0	8	0.8	6 to 20.....	4	40.0	46	28.0
6 to 20.....	2	12.5	36	3.8	21 to 50.....	2	20.0	46	28.0
21 to 50.....	5	31.2	154	16.1	51 to 100.....	1	10.0	66	40.2
51 to 100.....	2	12.5	132	13.8					
101 to 500.....	2	12.5	629	65.6	TALC AND SOAPSTONE.....	3	100.0	74	100.0
					6 to 20.....	2	66.7	20	27.0
					51 to 100.....	1	33.3	54	73.0

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	196	1,890	1	22	6	54	11	559	77	1,109	1	146
Granite.....	15	959			3	43	4	423	8	493		
Mica.....	44	274			1	2	2	16	41	255		
Feldspar.....	10	164	1	22			2	13	7	129		
Talc and soapstone.....	3	74							3	74		
All other industries.....	24	419			2	9	3	107	18	157	1	146

<sup>1</sup> Exclusive of 6 enterprises employing no wage earners in the following industries: Granite, 1; mica, 5.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	1,890	<b>1,696</b>	1,728	1,846	1,849	1,852	1,878	1,931	1,898	<b>2,063</b>	1,996	1,966	1,978	82.3
Granite.....	959	<b>843</b>	890	964	935	932	946	963	979	<b>1,028</b>	1,026	1,016	988	82.2
Mica.....	274	<b>262</b>	261	271	274	279	275	273	271	<b>290</b>	283	270	279	90.0
Feldspar.....	164	<b>131</b>	124	148	144	158	181	167	197	<b>193</b>	167	155	203	61.1
Talc and soapstone.....	74	<b>69</b>	69	77	78	69	69	71	71	<b>74</b>	80	81	80	85.2
Millstones.....	18	<b>11</b>	11	20	20	20	20	19	19	<b>19</b>	19	19	19	58.0
All other industries.....	401	<b>380</b>	373	366	398	394	387	438	361	<b>490</b>	421	425	409	73.5

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TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.						
	Total.	Granite.	Mica.	Feldspar.	Talc and soapstone.	Mill-stones.	All other. <sup>1</sup>
Number of enterprises.....	102	16	49	10	3	3	21
Number of mines and quarries.....	106	18	49	11	3	3	22
Capital.....	\$2,250,434	\$702,994	\$145,559	\$292,269	\$137,099	\$1,700	\$970,858
Principal expenses:							
Salaries and wages—							
Officers.....	\$78,187	\$60,017	\$7,980	\$3,480	\$3,850		\$3,390
Superintendents and managers.....	\$55,451	\$34,850	\$15,035	\$3,977	\$2,666		\$28,923
Technical employees.....	\$8,961	\$7,844	\$609				\$517
Clerks, etc.....	\$27,043	\$15,593	\$1,912	\$993	\$2,310		\$6,335
Wage earners.....	\$1,489,062	\$608,657	\$160,225	\$78,746	\$41,000	\$21,524	\$375,910
Supplies and materials.....	\$167,460	\$185,227	\$68,516	\$5,283	\$15,832	\$165	\$189,337
Fuel.....	\$213,392	\$90,151	\$18,321	\$2,537	\$2,285		\$100,098
Power.....	\$7,339	\$3,119			\$2,456		\$1,764
Royalties and rents.....	\$36,071	\$5,518	\$12,219	\$5,273	\$5,429	\$125	\$5,597
Taxes.....	\$21,121	\$10,808	\$2,155	\$466	\$1,208	\$6	\$6,458
Contract work.....	\$5,745			\$5,417			\$328
Expenditures for development (included in the above items).....	\$34,834	\$5,000	\$3,347	\$5,456	\$11,019		\$5,012
Value of products.....	\$2,736,543	\$1,576,250	\$389,442	\$114,159	\$72,027	\$30,775	\$553,890
Persons engaged in industry.....	2,106	1,025	353	178	81	23	446
Proprietors and firm members (total).....	90	10	56	4		5	15
Number performing manual labor.....	36	6	25	1		4	
Salaried officers.....	29	14	7	3	2		3
Superintendents and managers.....	59	20	13	5	2		19
Technical employees.....	6	4	1				1
Clerks, etc.....	34	18	2	2	3		9
Wage earners (average number).....	1,860	959	274	164	74	18	401
Wage earners by occupation (Dec. 15):	\$ 1,903	1,015	229	230	\$ 53	20	356
Above ground (total).....	176		60		26		81
Below ground (total).....							
Foremen, shift bosses, etc.—							
Above ground.....	79	35	13	9	5		17
Below ground.....	14		8		1		5
Enginemen, holstmen, electricians, mechanics, etc.—							
Above ground.....	88	50	11	6	1		20
Below ground.....	8		4				4
Miners, quarrymen, and drillmen, including their helpers—							
Above ground.....	548	206	64	178	3	11	91
Below ground.....	51		21		2		28
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—							
Above ground.....	242	120	9	19	17	9	68
Below ground.....	46		17		28		6
Muckers, loaders, laborers, and others not classified—							
Above ground.....	448	300	53	23	4		54
Below ground.....	57		19				38
Wage earners employed in mills and beneficiating plants—							
Above ground.....	498	295	74		23		106
Number of females included in wage earners reported above—							
Above ground.....	76		71	2	1		2
Mineral land operated..... acres.....	10,015	688	1,812	1,147	575	11	5,732
Land controlled, total..... acres.....	11,083	836	2,565	1,147	575	11	5,949
Mineral land owned.....	4,284	654	1,114	595	175	9	1,737
Mineral land leased.....	5,731	34	698	552	400	2	4,045
Timber and other lands owned and leased.....	1,068	148	753				167
Power used: Aggregate horsepower.....	5,039	2,025	510	230	236		2,038
Prime movers (horsepower, total).....	4,641	1,890	510	230	121		1,890
Steam engines—							
Number.....	81	35	13	6	2		26
Horsepower.....	4,341	1,890	464	210	112		1,665
Internal-combustion engines—							
Number.....	10		3	2	1		4
Horsepower.....	125		46	20	9		50
Water wheels and turbines—							
Number.....	1						1
Horsepower.....	175						175
Purchased power (horsepower, total).....	398	135			115		148
Electric motors operated by purchased current—							
Number.....	14	4			5		5
Horsepower.....	398	135			115		148
Electric motors run by current generated by enterprise using:							
Number.....	19	12					7
Horsepower.....	501	155					346
Fuel used:							
Coal, bituminous..... tons, 2,000 pounds.....	\$ 41,229	\$ 15,162	2,513	376	206		22,975
Wood..... cords.....	960		635		325		
Fuel oils..... barrels.....	16		6				10
Gasoline and other volatile oils..... barrels.....	277		107	72	21		77

<sup>1</sup> Includes enterprises as follows: Asbestos, 2; barytes, 1; clay, 6; coal, bituminous, 1; iron ore, 6; limestone, 2; sandstone, 1; silica, 2.  
<sup>2</sup> Includes 2 wage earners under 16 years of age.  
<sup>3</sup> Includes 5 tons of coke.

## NORTH DAKOTA.

North Dakota, which ranks sixteenth among the states in size (land area, 70,183 square miles) and thirty-sixth in population (646,872 in 1920), ranked thirty-ninth in value of products in 1919. The state ranked forty-first in total number of persons engaged in the mining industry and in the average number of wage earners employed.

The only mining industry in North Dakota for which statistics can be presented for 1919 was the mining of coal. Production of petroleum and natural gas was reported, but the operations were too small to come within the scope of the census. The total value of coal produced was \$1,927,304, an increase of 241.2 per cent over the value of all products reported at the census of 1909. This increase and the increases in capital, salaries and wages, cost of supplies and materials and fuel and power, as shown in Table 1, are in large part due to general price increases during the census interval. The real growth of mining in the state, however, is indicated by the increases in number of enterprises and individual mines and quarries operated and average number of wage earners employed.

The coal mined in North Dakota is lignite. Pro-

duction was reported from the western half of the state, chiefly from Burleigh County, but also from 15 other western counties.

The character of organization of the mining enterprises is shown in Table 2, which brings out the fact that although corporations conducted only about a fourth of the total number of mining enterprises, these were the larger enterprises and they collectively employed 73.8 per cent of the total number of wage earners and reported 66.3 per cent of the total value of products.

Table 3 shows that the coal mines of North Dakota were all small; only 2 enterprises reported more than 50 wage earners, and together these employed 46 per cent of the total number of wage earners.

The prevailing hours of labor in North Dakota mines in 1919 are shown in Table 4 to have been 44 to 53 per week. The 8-hour day and 6-day week prevailed.

The statistics for wage earners given in Table 5, showing changes in the number employed month by month, reflect the influence of seasonal demand.

Table 6 presents statistics in detail for the mining industry of the state.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	79	53	-----	Capital.....	\$1,865,347	\$1,058,649	76.2
Number of mines and quarries.....	79	53	-----	Principal expenses:			
Number of natural-gas wells.....	-----	6	-----	Salaries.....	159,646	62,599	155.1
Persons engaged.....	939	662	41.8	Wages.....	1,028,126	364,321	182.5
Proprietors and firm members, total....	75	51	-----	Contract work.....	30,750	1,325	-----
Number performing manual labor in or about the mines and quarries.....	23	19	-----	Supplies and materials.....	283,633	95,322	197.5
Salaried employees.....	90	49	-----	Fuel and power.....	87,694	12,835	193.7
Wage earners (average number).....	774	562	37.7	Royalties and rents.....	30,868	10,647	189.9
Power used (horsepower).....	2,037	2,025	0.6	Taxes.....	19,922	4,300	363.3
				Value of products.....	1,927,304	564,812	241.2

<sup>1</sup> Percentages are omitted where base is less than 100.

TABLE 2.—CHARACTER OF ORGANIZATION, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
COAL, BITUMINOUS.....	79	774	\$1,927,304	\$24,396	100.0	100.0	100.0
Corporation.....	19	571	1,278,196	67,273	24.1	73.8	66.3
Individual.....	48	160	497,140	10,857	60.8	20.7	25.8
Firm.....	12	43	151,968	12,664	15.2	5.6	7.9

TABLE 3.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
COAL, BITUMINOUS.....	79	100.0	774	100.0	COAL, BITUMINOUS—CON.				
No wage earners.....	3	3.8			21 to 50.....	4	5.1	97	12.5
1 to 5.....	51	64.6	123	15.9	51 to 100.....	1	1.3	85	11.0
6 to 20.....	19	24.0	198	25.6	101 to 500.....	1	1.3	271	35.0

TABLE 4.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
	Enterprises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
Coal, bituminous.....	176	774	1	14	2	7	67	730	6	28

<sup>1</sup> Exclusive of 3 enterprises employing no wage earners.

TABLE 5.—WAGE EARNERS, BY MONTHS: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Coal, bituminous.....	774	<b>1,011</b>	878	807	636	497	<i>478</i>	518	550	776	931	<b>1,064</b>	<b>1,188</b>	40.8

TABLE 6.—DETAILED STATISTICS FOR THE MINING INDUSTRY: 1919.

	PRODUCING ENTERPRISES.		PERSONS ENGAGED IN INDUSTRY—Continued. Wage earners by occupation (Dec. 15)—Continued. Miners, quarrymen, and drillmen, including their helpers—	PRODUCING ENTERPRISES.	
	Coal, bituminous.			Coal, bituminous.	
Number of enterprises.....	79		Above ground.....	25	
Number of mines and quarries.....	79		Below ground.....	550	
Capital.....	\$1,865,347		Timbermen, trackmen, and men engaged in hauling, tramming, etc.—		
Principal expenses:			Above ground.....	25	
Salaries and wages—			Below ground.....	158	
Officers.....	\$37,379		Muckers, loaders, laborers, and others not classified—		
Superintendents and managers.....	\$53,760		Above ground.....	191	
Technical employees.....	\$29,749		Below ground.....	98	
Clerks, etc.....	\$39,858		Mineral land operated..... acres..	17,784	
Wage earners.....	\$1,029,136		Land controlled, total..... acres..	18,558	
Supplies and materials.....	\$283,633		Mineral land owned.....	9,306	
Fuel.....	\$32,853		Mineral land leased.....	8,429	
Power.....	\$4,841		Timber and other lands owned and leased.....	834	
Royalties and rents.....	\$30,968		Power used: Aggregate horsepower.....	2,637	
Taxes.....	\$19,922		Prime movers (horsepower, total).....	1,783	
Contract work.....	\$30,760		Steam engines—		
Expenditures for development (included in the above items).....	\$63,885		Number.....	28	
Value of products.....	\$1,927,304		Horsepower.....	1,680	
Persons engaged in industry.....	969		Internal-combustion engines—		
Proprietors and firm members (total).....	75		Number.....	33	
Number performing manual labor.....	23		Horsepower.....	253	
Salaried officers.....	16		Purchased power (horsepower, total).....	364	
Superintendents and managers.....	27		Electric motors operated by purchased current—		
Technical employees.....	17		Number.....	24	
Clerks, etc.....	30		Horsepower.....	264	
Wage earners (average number).....	774		Electric motors run by current generated by enterprise using:		
Wage earners by occupation (Dec. 15):			Number.....	9	
Above ground (total).....	<sup>1</sup> 318		Horsepower.....	106	
Below ground (total).....	836		Fuel used:		
Foremen, shift bosses, etc.—			Coal, bituminous..... tons, 2,000 pounds..	16,437	
Above ground.....	15		Gasoline and other volatile oils..... barrels..	692	
Below ground.....	16				
Engineers, hoistmen, electricians, mechanics, etc.—					
Above ground.....	42				
Below ground.....	16				

<sup>1</sup> Includes 2 females.

## OHIO.

Ohio, which ranks thirty-fifth among the states in size (land area, 40,740 square miles) and fourth in population (5,759,394 in 1920), ranked seventh in value of mineral products for 1919. The state ranked fourth in total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross value of mineral products for the state in 1919 was \$134,518,505. Deducting from this gross value \$3,092,567, the value of natural gas sold by some producers for use as material and for resale by others, leaves \$131,425,938, the net value of products, an increase of 125.1 per cent as compared with the corresponding value reported at the census of 1909.

Increases in wages, cost of supplies and materials, fuel and power, and in the value of products shown in Table 1, the comparative summary for 1919 and 1909, although perhaps largely due to general price increases, were also in part due to growth of the mining industries. The progress of the mining industries in Ohio is better indicated by the moderate increase in the number of enterprises and number of individual mines and quarries and wells operated. The small decrease in the average number of wage earners, shown in Table 1, is due to unemployment in the coal-mining industry in November, 1919. With normal employment in the coal industry the average number of wage earners employed in all mining industries for 1919 would have shown slight increase over 1909. The addition of Federal income and excess-profits taxes since 1909 will account for the large increase in taxes.

The industries reported for 1919, ranked according to value of products, were coal mining, petroleum and natural-gas production, limestone quarrying, sandstone quarrying, clay mining, and gypsum mining. The production of salt was an important mineral industry in Ohio in 1919, but was not included in the census of mines and quarries. Those industries for which the statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

Four industries, coal, petroleum and natural gas, limestone, and sandstone, together reported 98.9 per cent of the total value of products and 98.8 per cent of the total number of wage earners employed in mining and quarrying in Ohio in 1919.

The principal mining industry, coal, reported products valued at \$77,988,602, which was 58 per cent of the total value of products of all mining industries

in the state. Ohio ranked fourth among the states in value of products of coal mines. The coal-producing area of this state is part of the Northern Appalachian Coal Province, which extends into adjoining states. In Ohio it covers approximately 12,500 square miles in eastern and southeastern counties, 28 of which reported production in 1919.

The petroleum and natural-gas industry ranked second in importance, with an output valued at \$42,390,958 (net). Ohio ranked seventh among the states in this industry. The petroleum and natural-gas operations in Ohio were in two fields—the Appalachian Field in the eastern half of the state, from which 36 counties reported production; and the Lima-Indiana Field in the northwestern part of the state, from which 14 counties reported production.

In 1919 limestone held third rank among the industries in the state and sandstone fourth. In both these industries Ohio ranked second among the states with products valued at \$6,742,496 and \$2,759,352, respectively. The limestone operations were well distributed over the state and were reported from 32 counties, whereas the sandstone quarrying was reported from only 12 counties in the eastern half of the state.

In addition to the products indicated by the industry designations by-products were reported as follows: Twelve clay enterprises produced coal; one enterprise, classified as a limestone operation, also mined coal; two limestone mining enterprises reported production of lime; ten coal enterprises produced clay, and five produced pyrite. The aggregate value of these by-products, together with other unspecified products and receipts for power sold and miscellaneous work or services for other enterprises, amounting to \$976,086, has been included in the total value of products reported for the industries. The statistics do not include data on the mining of clay or of coal, incidental to clay mining, when these were mined by manufacturers of clay products for use in their plants at the mines.

Operations on nonproductive mineral properties were reported by a few enterprises in Ohio in 1919. These operations for development were negligible as compared with the producing enterprises.

The corporate form of organization was most common among enterprises in the mining industries in Ohio in 1919. As shown in Table 3, corporations conducted 39.7 per cent of all enterprises, a greater percentage than that shown for any other form of

organization. They employed 91.9 per cent of the total number of wage earners and reported 89.6 per cent of the total value of products. The preponderance of corporations is most marked in the coal industry in which they operated 57.5 per cent of the enterprises, employed 93.4 per cent of the total number of wage earners, and reported 93.8 per cent of the total value of products, and is least marked in the petroleum and natural-gas industry, in which they operated only 26.8 per cent of the total number of enterprises, but employed 78.6 per cent of the total number of wage earners and reported 81.3 per cent of the total value of products.

Table 4 shows the relatively large number of small enterprises as measured by the number of wage earners employed. Of the total number of enterprises in Ohio, 94.9 per cent were in classes having no wage earners or fewer than 101, and such enterprises employed only 37 per cent of the total number of wage earners. On the other hand, enterprises employing more than 100 wage earners constituted only 5.1 per cent of the total number of enterprises but employed 63 per cent of the total number of wage earners. Similar relations are also shown in Table 4 for the coal mining and quarrying industries.

Table 5 shows that in a majority of enterprises employing wage earners and for more than 80 per cent of the total number of wage earners the prevailing hours

of labor were 44 to 53 per week. For a considerable number of enterprises and wage earners the prevailing hours were 54 to 62 per week. Table 5 also shows that in the coal-mining industry the hours of labor per week were most commonly 44 to 53, in the quarrying industries 54 to 62, and in the petroleum and natural-gas industry also 54 to 62, but in this industry a considerable number of enterprises, employing relatively very few wage earners, reported the prevailing hours as less than 35 per week.

The statistics for wage earners given in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The extremely low minimum in the coal-mining industry in November was the result of the great strike. This figure is not only extremely low as compared with the number employed in other months but is abnormal in that the minimum employment in the coal-mining industry in Ohio more commonly occurs in the spring or summer months. As the statistics for coal mining dominate those for the other industries, the month of minimum employment shown for all industries combined in Table 6 is also abnormal.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	2,283	1,876	21.7	Capital.....	\$256,057,906	\$161,324,529	58.7
Number of mines and quarries.....	1,064	964	10.4	Principal expenses:			
Number of petroleum and natural-gas wells.....	35,440	35,067	1.1	Salaries.....	8,042,224	2,774,964	189.8
Number of natural-gas gasoline plants.....	53	( <sup>2</sup> )	.....	Wages.....	58,109,904	26,769,229	117.1
Persons engaged.....	56,786	56,256	0.9	Contract work.....	3,929,476	2,970,544	32.3
Proprietors and firm members, total.....	3,309	3,064	8.0	Supplies and materials <sup>3</sup> .....	19,206,516	12,736,355	50.8
Number performing manual labor in or about the mines, quarries, and wells.....	509	571	-10.9	Fuel and power.....	4,131,068	892,671	362.8
Salaried employees.....	4,129	2,625	57.3	Royalties and rents.....	6,339,316	3,667,382	72.9
Wage earners (average number).....	49,298	50,567	-2.5	Taxes.....	4,028,780	856,766	370.2
Power used (horsepower).....	237,611	294,763	14.5	Value of products.....	124,518,505	63,767,112	111.0

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Figures not available.

<sup>3</sup> Includes cost of natural gas purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	2,283	49,298	100.0	\$124,518,505	100.0	Limestone.....	90	2,262	4.6	\$6,742,496	5.0
Coal, bituminous.....	788	40,452	82.1	77,988,602	58.0	Sandstone.....	21	876	1.8	2,759,352	2.1
Petroleum and natural gas.....	1,333	5,123	10.4	45,483,525	33.8	All other industries <sup>1</sup> .....	51	586	1.2	1,544,530	1.1

<sup>1</sup> Includes enterprises in industries as follows: Clay, 40; gypsum, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
<b>ALL INDUSTRIES</b> .....	2,283	49,298	\$124,518,505	\$58,922	100.0	100.0	100.0
Corporation.....	906	45,318	120,568,610	133,078	89.7	91.9	89.6
Individual.....	513	1,478	4,087,636	7,968	22.5	3.0	3.0
Firm.....	782	2,331	8,706,783	11,134	34.3	4.7	6.5
Other.....	82	171	1,155,476	14,091	3.6	0.3	0.9
<b>COAL, BITUMINOUS</b> .....	788	40,452	77,988,002	98,970	100.0	100.0	100.0
Corporation.....	453	37,796	73,116,226	161,404	57.5	93.4	93.3
Individual.....	172	1,118	2,008,691	11,678	21.8	2.8	2.6
Firm <sup>1</sup> .....	163	1,536	2,863,685	17,589	20.7	3.8	3.7
<b>PETROLEUM AND NATURAL GAS</b> .....	1,333	5,123	45,483,625	34,121	100.0	100.0	100.0
Corporation.....	357	4,027	38,980,934	103,532	26.8	78.6	81.3
Individual.....	296	261	1,791,832	6,053	22.2	5.1	3.9
Firm.....	600	698	5,661,294	9,435	45.0	13.6	12.4
Other.....	80	137	1,069,465	13,268	6.0	2.7	2.4
<b>LIMESTONE</b> .....	90	2,262	6,742,496	74,917	100.0	100.0	100.0
Corporation.....	45	2,057	6,287,088	139,713	50.0	92.3	93.2
Individual.....	30	81	245,901	8,197	33.3	3.6	3.6
Firm <sup>1</sup> .....	15	94	209,507	13,967	16.7	4.2	3.1

<sup>1</sup>Includes 1 other form of organization.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	2,283	100.0	49,298	100.0	<b>LIMESTONE</b> .....	90	100.0	2,262	100.0
No wage earners.....	604	26.5	.....	.....	No wage earners.....	2	2.2	.....	.....
1 to 5.....	974	42.7	1,945	3.9	1 to 5.....	39	43.3	87	3.8
6 to 20.....	323	14.1	3,509	7.1	6 to 20.....	24	26.7	257	11.4
21 to 50.....	172	7.5	5,797	11.8	21 to 50.....	18	20.0	551	24.4
51 to 100.....	93	4.1	7,012	14.2	51 to 100.....	3	3.3	228	10.1
101 to 500.....	105	4.6	19,892	40.4	101 to 500.....	4	4.4	1,139	50.4
501 to 1,000.....	9	0.4	6,465	13.1					
Over 1,000.....	3	0.1	4,678	9.5	<b>SANDSTONE</b> .....	21	100.0	875	100.0
<b>COAL, BITUMINOUS</b> .....	788	100.0	40,452	100.0	1 to 5.....	4	19.0	6	0.7
No wage earners.....	27	3.4	.....	.....	6 to 20.....	7	33.3	81	9.3
1 to 5.....	253	32.1	725	1.8	21 to 50.....	4	19.0	117	13.4
6 to 20.....	198	25.1	2,258	5.6	51 to 100.....	3	14.3	228	26.1
21 to 50.....	129	16.4	4,890	10.9	101 to 500.....	3	14.3	443	50.6
51 to 100.....	78	9.8	5,755	14.2					
101 to 500.....	95	12.1	17,680	43.7					
501 to 1,000.....	7	0.9	4,966	12.3					
Over 1,000.....	3	0.4	4,678	11.6					
<b>PETROLEUM AND NATURAL GAS</b> .....	1,333	100.0	5,123	100.0					
No wage earners.....	572	42.9	.....	.....					
1 to 5.....	660	49.5	1,096	21.4					
6 to 20.....	72	5.4	685	13.4					
21 to 50.....	14	1.1	477	9.3					
51 to 100.....	10	0.8	736	14.4					
101 to 500.....	3	0.2	680	12.3					
501 to 1,000.....	2	0.2	1,499	29.3					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	1,679	49,298	194	547	71	525	913	40,318	445	7,308	30	467	26	133
Coal, bituminous.....	761	40,452	20	350	42	476	675	38,968	24	658	.....	.....	.....	.....
Petroleum and natural gas.....	761	5,123	173	196	26	45	202	562	305	3,783	29	394	26	133
Limestone.....	88	2,262	.....	.....	2	3	6	467	80	1,792	.....	.....	.....	.....
Sandstone.....	21	875	.....	.....	.....	.....	4	11	16	791	1	73	.....	.....
All other industries.....	48	586	1	1	1	1	26	310	20	274	.....	.....	.....	.....

<sup>1</sup> Exclusive of 604 enterprises employing no wage earners in industries as follows: Clay, 3; coal, bituminous, 27; petroleum and natural gas, 572; limestone, 2.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OF NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	49,470	51,937	48,466	48,189	47,986	50,487	52,390	53,684	56,510	<b>54,963</b>	56,674	19,053	51,351	33.4
Producing enterprises.....	49,298	51,820	48,325	48,005	47,838	50,386	52,226	53,518	56,340	<b>54,792</b>	56,448	18,793	51,125	33.1
Coal, bituminous.....	40,452	43,395	40,357	39,890	39,465	41,530	43,185	44,175	46,693	<b>47,253</b>	47,195	9,827	42,479	20.3
Petroleum and natural gas.....	5,123	4,982	4,880	4,935	4,952	5,082	5,108	5,248	5,407	<b>5,331</b>	5,211	5,171	5,189	89.9
Limestone.....	2,262	2,173	<i>1,878</i>	1,902	1,986	2,166	2,415	2,584	<b>2,659</b>	2,560	2,458	2,314	2,060	70.6
Sandstone.....	875	701	<i>687</i>	766	900	1,008	971	965	970	<b>977</b>	903	863	789	68.2
All other industries.....	586	569	543	<i>519</i>	535	550	577	566	611	<b>662</b>	681	618	608	75.2
Nonproducing enterprises.....	172	<i>117</i>	141	134	148	151	154	166	170	191	<b>226</b>	240	226	48.8



TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.						Non-producing enterprises. <sup>3</sup>
		Total.	Coal, bituminous. <sup>1</sup>	Petroleum and natural gas.	Limestone.	Sandstone.	All other. <sup>2</sup>	
Number of enterprises.....	2,289	2,288	788	1,333	90	21	51	6
Number of mines and quarries.....	1,065	1,064	898	.....	91	23	52	1
Number of petroleum and natural-gas wells.....	35,440	35,440	.....	35,440	.....	.....	.....	.....
Number of natural-gas gasoline plants.....	53	53	.....	53	.....	.....	.....	.....
Capital.....	\$257,144,007	\$256,057,996	\$144,508,527	\$95,749,317	\$10,087,808	\$4,026,782	\$1,685,567	\$1,088,011
Principal expenses:								
Salaries and wages—								
Officers.....	\$2,729,182	\$2,726,182	\$2,081,874	\$461,053	\$124,608	\$96,352	\$22,295	\$3,200
Superintendents and managers.....	\$2,628,882	\$2,620,782	\$1,735,506	\$601,974	\$187,463	\$49,227	\$46,612	\$8,100
Technical employees.....	\$252,903	\$252,903	\$173,699	\$73,045	\$4,800	\$1,359	.....	.....
Clerks, etc.....	\$2,445,777	\$2,442,357	\$1,162,018	\$968,346	\$193,330	\$80,042	\$38,121	\$2,920
Wage earners.....	\$58,319,994	\$58,109,904	\$47,748,648	\$9,343,279	\$2,327,159	\$965,151	\$725,667	\$209,790
Supplies and materials.....	\$16,375,997	\$16,116,949	\$9,106,833	\$5,197,502	\$1,339,758	\$288,557	\$185,299	\$259,048
Cost of natural gas purchased as material and resold.....	\$3,092,567	\$3,092,567	.....	\$3,092,567	.....	.....	.....	.....
Fuel.....	\$2,951,126	\$2,949,460	\$1,433,453	\$848,211	\$494,088	\$62,720	\$81,008	\$1,966
Power.....	\$1,189,858	\$1,181,608	\$925,302	\$11,083	\$200,673	\$22,927	\$21,023	\$8,250
Royalties and rents.....	\$6,343,186	\$6,339,816	\$1,420,770	\$4,814,769	\$64,009	\$15,869	\$24,869	\$3,570
Taxes.....	\$1,031,123	\$4,028,789	\$1,562,444	\$2,045,136	\$358,289	\$47,991	\$14,629	\$2,334
Contract work.....	\$3,944,652	\$3,929,476	\$371,663	\$3,412,458	\$120,421	\$24,034	.....	\$15,176
Expenditures for development (Included in the above items).....	\$8,439,675	\$7,981,196	\$1,142,196	\$6,745,006	\$14,550	\$19,499	\$9,944	\$508,480
Value of products.....	\$134,513,505	\$134,513,505	\$77,968,602	\$45,483,526	\$6,742,496	\$2,759,352	\$1,544,530	.....
Persons engaged in industry.....	56,916	56,736	43,433	9,072	2,599	968	664	180
Proprietors and firm members (total).....	3,309	3,309	622	2,688	65	2	32	.....
Number performing manual labor.....	509	509	312	163	20	.....	14	.....
Salaried officers.....	798	791	538	193	36	19	5	2
Superintendents and managers.....	1,162	1,159	728	310	92	19	15	3
Technical employees.....	149	149	110	35	3	.....	.....	.....
Clerks, etc.....	2,033	2,080	988	828	141	52	26	3
Wage earners (average number).....	49,470	49,296	40,452	5,123	2,262	875	586	172
Wage earners by occupation (Dec. 15):								
Above ground (total).....	16,865	16,837	8,046	5,249	2,482	818	242	28
Below ground (total).....	40,489	40,291	39,831	.....	.....	.....	460	198
Foremen, shift bosses, etc.—								
Above ground.....	497	494	354	.....	94	29	17	3
Below ground.....	662	660	641	.....	.....	.....	19	2
Enginemen, hoistmen, electricians, mechanics, etc.—								
Above ground.....	7,362	7,352	2,681	4,177	419	45	30	10
Below ground.....	1,515	1,507	1,498	.....	.....	.....	9	8
Miners, quarrymen, and drillmen, including their helpers—								
Above ground.....	1,707	1,707	396	.....	917	328	66	.....
Below ground.....	18,341	18,163	17,948	.....	.....	.....	215	178
Timberman, trackmen, and men engaged in hauling, tramming, etc.—								
Above ground.....	978	975	639	.....	100	21	15	3
Below ground.....	7,736	7,726	7,622	.....	.....	.....	104	10
Muckers, loaders, laborers, and others not classified—								
Above ground.....	5,946	5,984	3,776	1,072	862	156	68	12
Below ground.....	12,235	12,235	12,122	.....	.....	.....	113	.....
Wage earners employed in mills and beneficiating plants—								
Above ground.....	375	375	.....	.....	90	239	46	.....
Mineral and oil land operated..... acres	1,947,462	1,914,023	442,887	1,449,239	9,437	2,978	9,482	33,439
Land controlled, total..... acres	1,996,126	1,962,687	488,852	1,449,239	10,759	3,094	10,743	33,439
Mineral and oil land owned.....	414,597	413,597	348,214	49,655	8,849	2,689	4,190	1,000
Mineral and oil land leased.....	1,551,640	1,519,201	113,280	1,399,684	7,566	2,899	5,292	32,439
Timber and other lands owned and leased.....	29,889	29,889	27,358	.....	1,154	116	1,261	.....
Power used: Aggregate horsepower.....	337,982	337,611	136,145	153,220	39,881	5,431	2,984	371
Prime movers (horsepower, total).....	272,812	272,716	84,678	158,063	29,480	3,529	2,046	96
Steam engines—								
Number.....	2,241	2,239	650	1,172	357	36	24	2
Horsepower.....	138,385	138,339	79,949	24,274	28,746	3,419	1,951	46
Steam turbines—								
Number.....	4	4	4	.....	.....	.....	.....	.....
Horsepower.....	3,275	3,275	3,275	.....	.....	.....	.....	.....
Internal-combustion engines—								
Number.....	6,810	6,308	120	6,134	43	5	6	2
Horsepower.....	131,124	131,074	1,854	128,809	706	110	95	60
Water wheels and turbines—								
Number.....	1	1	.....	.....	1	.....	.....	.....
Horsepower.....	28	28	.....	.....	28	.....	.....	.....
Purchased power (horsepower, total).....	65,170	64,895	51,567	137	10,401	1,902	888	275
Electric motors operated by purchased current—								
Number.....	1,966	1,956	1,647	11	221	47	30	10
Horsepower.....	65,050	64,775	51,447	137	10,401	1,902	888	275
Other equipment operated by purchased power—								
Horsepower.....	120	120	120	.....	.....	.....	.....	.....
Electric motors run by current generated by enterprise using:								
Number.....	1,620	1,620	1,498	2	6	96	18	.....
Horsepower.....	40,687	40,687	38,145	37	36	2,222	247	.....
Fuel used:								
Coal, anthracite..... tons, 2,240 pounds.....	100	100	.....	.....	100	.....	.....	.....
Coal, bituminous..... tons, 2,000 pounds.....	863,191	862,717	675,165	7,365	137,879	23,954	18,354	474
Coke..... tons, 2,000 pounds.....	788	788	.....	.....	187	130	471	.....
Wood..... cords.....	139	139	.....	.....	139	.....	.....	.....
Fuel oils..... barrels.....	1,335	1,335	95	1,180	120	40	.....	.....
Gasoline and other volatile oils..... barrels.....	4,946	4,946	1,421	780	2,075	110	610	.....
Natural gas..... 1,000 cubic feet.....	5,441,460	5,439,260	2,468	5,435,316	1,476	.....	.....	2,200

<sup>1</sup> Exclusive of a small quantity of coal mined with clay by, and included in reports of, manufacturers of clay products.

<sup>2</sup> Includes enterprises as follows: Clay, 49; gypsum, 2.

<sup>3</sup> Includes enterprises as follows: Coal, bituminous, 1; petroleum and natural gas, 5.

## OKLAHOMA.

Oklahoma, which ranks seventeenth in size among the states (land area 69,414 square miles) and twenty-first in population (2,028,283 in 1920), ranked third in the value of mineral products for 1919. The state ranked sixth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross amount received for products by operators of all mines, quarries, and wells in Oklahoma in 1919 was \$281,927,732. Deducting from this amount, \$9,758,073, the value of natural gas sold by some producers to others who used it as material or resold it and included it in the value of products reported by them, leaves \$272,169,659 as the net value of products for the state. This was an increase of 967 per cent as compared with the corresponding amount for 1909. The value of products reported for 1919 includes \$1,076,195, the value of by-products and receipts for power sold and for work or miscellaneous services for other enterprises. The increases in value of products, capital, wages, cost of supplies and materials and fuel and power, as shown in Table 1, are due in large part to general price increases and therefore exaggerate the growth of the industries which is indicated by the large increases in number of enterprises, wells operated, and in the average number of wage earners. The large increase shown in taxes is accounted for by impost of state output tax and addition of Federal income taxes since 1909.

The mining industries in Oklahoma in 1919, classified according to principal products and listed in order of value of products, were petroleum and natural gas, lead and zinc, bituminous coal, limestone, gypsum, granite, sandstone, asphalt, and abrasive materials. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The principal industry in Oklahoma in 1919 was the production of petroleum and natural gas. The statistics herein presented for this industry include data on the operation of plants engaged in the extraction of gasoline from natural gas, whether such plants were connected with enterprises operating wells or not. The petroleum and natural-gas industry embraced approximately 90 per cent of all enterprises in the mineral industries, employed 62.5 per cent of the total number of wage earners, and contributed 87.8 per cent of the gross value of all mineral products. The net value of products, after eliminating duplications resulting from sales of products by some producers to others, was \$237,739,377, which was much larger than the net value of products reported by any other state, and was more than 25 per cent of the total net value of products for the industry in the United States. Production of petroleum and natural gas was reported to the census from 31 counties. In these counties there were some 90 recognized produc-

tive pools or local oil fields distributed over approximately 7,500 square miles, all of this territory being part of the Mid-Continent Oil Field which extends into Kansas, Texas, and Louisiana.

The industry second in importance, ranked by value of products but third on basis of number of wage earners, was the mining of lead and zinc ores in Ottawa County. This industry included 5.7 per cent of the total number of enterprises in the state, employed 15.5 per cent of the total number of wage earners, and reported value of products to the amount of \$18,979,726, or 6.7 per cent of the total value of products for the state. In the production of lead and zinc ores Oklahoma outranked all other states.

The bituminous-coal mining industry was third in importance in Oklahoma in 1919 on basis of value of products, but second on basis of number of wage earners employed. This industry included practically 5 per cent of the total number of enterprises, employed 20.8 per cent of the total number of wage earners, and reported products valued at \$14,477,317, or 5.1 per cent of the total value of products of the state. The Oklahoma coal fields lie in the eastern part of the state and extend over a very wide territory from which 12 counties reported production in 1919.

Mining enterprises in Oklahoma in 1919 are classified in Table 3 according to the form or character of operating organizations. This table shows that corporations conducted the most important enterprises in all industries, and outclassed other forms of operating organizations in the number of wage earners employed and in the value of products reported.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Oklahoma, 13.4 per cent had no wage earners and 82.6 per cent reported fewer than 101 wage earners each and employed 48.5 per cent of the total number of wage earners. On the other hand, only 4 per cent of the total number of enterprises had more than 100 wage earners each and these enterprises employed 51.4 per cent of the total number of wage earners. The larger enterprises were reported by the petroleum and natural-gas, coal-mining, lead and zinc mining, and limestone-quarrying industries.

Table 5 shows that in a majority of enterprises employing wage earners and for more than half the wage earners in mining industries in Oklahoma in 1919 the prevailing hours of labor were 54 or more per week. Of the enterprises and wage earners in this class 97 per cent were in the petroleum and natural-gas industry. The 8-hour day and 6-day week prevailed in the coal-mining and lead and zinc mining industries. In the last-named industry, however, a number of enterprises which reported an 8-hour day for miners, also reported a 10-hour day for those wage earners employed in mills and otherwise above ground.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The minimum shown for the coal industry in the month of November was due to the great coal strike during which the unemployment

in this important industry was so extensive as to abnormally reduce the number reported for all industries combined.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	1,934	864	123.8	Capital.....	\$740,757,178	\$70,696,411	947.8
Number of mines and quarries.....	284	212	34.0	Principal expenses:			
Number of petroleum and natural-gas wells.....	44,735	12,113	269.3	Salaries.....	12,532,452	1,342,557	833.5
Number of natural-gas gasoline plants.....	311			Wages.....	46,809,200	7,775,413	502.0
Persons engaged.....	40,855	13,580	200.8	Contract work.....	18,982,377	2,137,314	788.1
Proprietors and firm members, total.....	1,106	648	70.7	Supplies and materials <sup>2</sup> .....	65,216,973	5,027,763	1,197.1
Number performing manual labor in or about the mines, quarries, and wells.....	58	89		Fuel and power.....	4,793,574	384,186	1,147.7
Salaried employees.....	5,835	1,274	358.0	Royalties and rents.....	30,688,890	2,783,975	1,002.3
Wage earners (average number).....	33,914	11,658	190.9	Taxes.....	10,338,243	308,216	3,254.2
Power used (horsepower).....	443,173	95,074	371.4	Value of products.....	281,927,732	25,637,892	999.7

<sup>1</sup> Percentages are omitted where base is less than 100.

<sup>2</sup> Includes natural gas purchased as material or for resale.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	1,934	33,914	100.0	\$281,927,732	100.0	Coal, bituminous.....	94	7,040	20.8	\$14,477,317	5.1
Petroleum and natural gas.....	1,099	21,180	62.5	247,497,450	87.8	Limestone.....	13	278	0.8	567,288	0.2
Lead and zinc.....	111	5,253	15.5	18,979,726	6.7	Gypsum.....	5	122	0.4	283,025	0.1
						All other industries <sup>1</sup> .....	12	41	0.1	122,926	(?)

<sup>1</sup> Includes enterprises in industries as follows: Abrasive materials, 2; asphalt, 2; granite, 6; sandstone, 2.

<sup>2</sup> Less than one-tenth of 1 per cent.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
<b>ALL INDUSTRIES.....</b>	1,934	33,914	\$281,927,732	\$145,774	100.0	100.0	100.0
Corporation.....	1,375	31,010	254,299,664	184,945	71.1	91.4	90.2
Individual.....	168	1,421	11,776,925	70,101	8.7	4.2	4.2
Firm.....	301	1,094	10,193,715	33,866	15.6	3.2	3.6
Other.....	90	389	5,657,428	62,860	4.7	1.1	2.0
<b>PETROLEUM AND NATURAL GAS.....</b>	1,099	21,180	247,497,450	145,672	100.0	100.0	100.0
Corporation.....	1,197	19,313	223,366,976	186,606	70.5	91.2	90.2
Individual.....	147	983	10,064,632	63,426	8.7	4.6	4.1
Firm.....	270	629	8,776,184	32,504	15.9	3.0	3.5
Other.....	85	255	5,296,658	62,302	5.0	1.2	2.1
<b>LEAD AND ZINC.....</b>	111	5,253	18,979,726	170,989	100.0	100.0	100.0
Corporation.....	88	4,587	16,257,559	184,745	79.3	87.3	85.7
Firm <sup>1</sup> .....	18	532	2,360,397	131,133	16.2	10.1	12.4
Other.....	5	134	361,770	72,354	4.5	2.6	1.9
<b>COAL, BITUMINOUS.....</b>	94	7,040	14,477,317	154,014	100.0	100.0	100.0
Corporation.....	75	6,777	13,986,627	186,488	79.8	96.3	94.6
Individual.....	12	154	274,234	22,853	12.8	2.2	1.9
Firm.....	7	109	216,456	30,922	7.4	1.5	1.5
<b>LIMESTONE.....</b>	13	278	567,288	43,638	100.0	100.0	100.0
Corporation.....	6	186	358,617	59,770	46.2	66.9	63.2
Individual <sup>2</sup> .....	7	92	208,671	29,810	58.8	33.1	36.8
<b>GYPSUM.....</b>	5	122	283,025	56,605	100.0	100.0	100.0
Corporation.....	5	122	283,025	56,605	100.0	100.0	100.0

<sup>1</sup> Includes 2 individuals.

<sup>2</sup> Includes 2 firms.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES.....</b>	<b>1,934</b>	<b>100.0</b>	<b>33,914</b>	<b>100.0</b>	<b>LEAD AND ZINC.....</b>	<b>111</b>	<b>100.0</b>	<b>5,253</b>	<b>100.0</b>
No wage earners.....	259	13.4			1 to 5.....	14	12.6	47	0.9
1 to 5.....	994	51.4	1,966	5.8	6 to 20.....	29	26.1	333	6.3
6 to 20.....	359	18.6	3,740	11.0	21 to 50.....	38	29.7	1,161	22.1
21 to 50.....	167	8.6	5,356	15.8	51 to 100.....	21	18.9	1,376	26.2
51 to 100.....	77	4.0	5,408	15.9	101 to 500.....	14	12.6	2,336	44.5
101 to 500.....	72	3.7	13,229	39.0					
501 to 1,000.....	6	0.3	4,215	12.4	<b>LIMESTONE.....</b>	<b>13</b>	<b>100.0</b>	<b>278</b>	<b>100.0</b>
<b>PETROLEUM AND NATURAL GAS...</b>	<b>1,099</b>	<b>100.0</b>	<b>21,180</b>	<b>100.0</b>	No wage earners.....	1	7.7		
No wage earners.....	253	14.9			1 to 5.....	2	15.4	5	1.8
1 to 5.....	963	56.7	1,878	8.9	6 to 20.....	5	38.5	57	20.5
6 to 20.....	307	13.1	3,160	14.9	21 to 50.....	4	30.8	115	41.4
21 to 50.....	99	8.8	3,051	14.4	101 to 500.....	1	7.7	101	36.3
51 to 100.....	39	2.3	2,810	13.3					
101 to 500.....	33	1.9	6,617	31.2	<b>GYPHUM.....</b>	<b>5</b>	<b>100.0</b>	<b>122</b>	<b>100.0</b>
501 to 1,000.....	6	0.3	3,664	17.3	6 to 20.....	1	20.0	9	7.4
					21 to 50.....	4	80.0	113	92.6
<b>COAL, BITUMINOUS.....</b>	<b>94</b>	<b>100.0</b>	<b>7,040</b>	<b>100.0</b>					
No wage earners.....	1	1.1							
1 to 5.....	10	10.6	24	0.3					
6 to 20.....	14	14.9	152	2.2					
21 to 50.....	27	28.7	916	13.0					
51 to 100.....	17	18.1	1,222	17.4					
101 to 500.....	24	25.5	4,175	59.3					
501 to 1,000.....	1	1.1	551	7.8					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enterprises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries.....	1,675	33,914	98	1,022	43	151	408	13,274	598	8,524	267	8,297	261	2,646
Petroleum and natural gas.....	1,446	21,180	91	185	38	51	218	2,004	573	8,029	266	8,267	260	2,644
Coal, bituminous.....	93	7,040	7	837	5	100	77	6,014	4	89				
Lead and zinc.....	111	5,253					104	5,178	6	73			1	2
Limestone.....	12	278					4	51	8	227				
Gypsum.....	5	122							4	92	1	30		
All other industries.....	8	41					5	27	3	14				

1 Exclusive of 259 enterprises employing no wage earners in industries as follows: Coal, bituminous, 1; granite, 4; limestone, 1; petroleum and natural gas, 253.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	33,959	32,974	32,569	32,756	33,094	33,247	33,056	34,366	35,940	36,677	34,736	39,557	36,546	80.5
Producing enterprises.....	33,914	32,940	32,531	32,713	33,058	33,205	33,015	34,320	35,836	36,617	34,674	39,510	36,499	80.5
Petroleum and natural gas.....	21,180	<i>18,544</i>	19,572	20,290	20,425	20,783	20,828	21,555	22,082	22,080	22,169	22,364	22,448	87.0
Coal, bituminous.....	7,040	7,595	7,589	6,950	7,206	7,337	7,293	7,512	7,890	8,102	8,299	8,692	7,754	11.6
Lead and zinc.....	5,253	5,429	4,950	5,064	5,024	4,963	4,808	4,857	5,345	5,847	5,759	5,745	5,849	77.0
Limestone.....	278	252	283	269	230	239	228	317	391	357	281	277	282	55.5
Gypsum.....	122	101	112	109	116	121	122	132	122	161	127	123	118	62.7
All other industries.....	41	18	25	31	57	62	41	47	65	40	39	39	28	27.7
Nonproducing enterprises.....	45	34	38	43	36	42	41	40	54	60	52	47	47	56.7

MINES AND QUARRIES—OKLAHOMA.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.							Nonproducing enterprises. <sup>1</sup>
		Total.	Petroleum and natural gas.	Lead and zinc. <sup>2</sup>	Coal, bituminous.	Limestone.	Gypsum.	All other. <sup>3</sup>	
Number of enterprises.....	1,964	1,934	1,699	111	94	13	5	12	30
Number of mines and quarries.....	286	284	.....	123	131	13	5	12	2
Number of petroleum and natural-gas wells.....	44,735	44,735	44,735	.....	.....	.....	.....	.....	.....
Number of natural-gas gasoline plants.....	311	311	311	.....	.....	.....	.....	.....	.....
Capital.....	\$742,864,134	\$740,757,178	\$699,663,144	\$27,628,036	\$12,238,946	\$699,356	\$330,882	\$196,814	\$2,106,956
Principal expenses:									
Salaries and wages—									
Officers.....	\$3,327,771	\$3,322,871	\$2,818,505	\$152,069	\$324,684	\$23,800	\$3,213	\$600	\$4,900
Superintendents and managers.....	\$4,142,032	\$4,126,422	\$3,375,531	\$347,989	\$361,097	\$29,561	\$9,244	\$3,000	\$15,610
Technical employees.....	\$720,739	\$720,769	\$664,013	\$37,405	\$16,351	\$3,000	.....	.....	.....
Clerks, etc.....	\$4,367,075	\$4,362,390	\$3,927,418	\$147,006	\$220,210	\$45,172	\$9,134	\$450	\$4,685
Wage earners.....	\$46,894,339	\$46,809,200	\$30,749,438	\$6,908,259	\$3,789,936	\$210,489	\$109,099	\$41,979	\$85,189
Supplies and materials.....	\$55,733,680	\$55,458,900	\$49,598,967	\$4,218,142	\$1,391,771	\$117,656	\$97,604	\$34,760	\$274,760
Cost of natural gas purchased as material and resold.....	\$9,758,073	\$9,758,073	\$9,758,073	.....	.....	.....	.....	.....	.....
Fuel.....	\$3,858,714	\$3,826,667	\$2,378,833	\$733,285	\$636,314	\$40,167	\$32,465	\$10,603	\$32,047
Power.....	\$966,907	\$966,907	\$107,765	\$743,944	\$112,573	\$2,625	.....	.....	.....
Royalties and rents.....	\$30,733,984	\$30,688,890	\$27,211,429	\$3,106,495	\$349,853	\$16,920	\$807	\$3,336	\$45,074
Taxes.....	\$10,341,126	\$10,338,243	\$9,782,360	\$359,546	\$186,140	\$5,029	\$4,166	\$1,002	\$2,883
Contract work.....	\$19,181,284	\$18,982,377	\$18,066,838	\$228,399	\$58,140	.....	.....	.....	\$198,887
Expenditures for development (included in the above items).....	\$55,823,200	\$55,218,905	\$54,346,776	\$500,701	\$279,428	.....	.....	\$2,000	\$604,295
Value of products.....	\$281,927,732	\$281,927,732	\$247,497,450	\$18,979,726	\$14,477,317	\$567,288	\$283,025	\$122,926	.....
Persons engaged in industry.....	40,928	40,855	26,378	5,635	8,296	351	134	61	73
Proprietors and firm members (total).....	1,109	1,106	980	68	33	9	.....	16	3
Number performing manual labor.....	58	58	24	2	21	1	.....	10	.....
Salaries officers.....	849	840	701	46	86	5	1	1	9
Superintendents and managers.....	1,670	1,656	1,340	133	154	21	6	2	14
Technical employees.....	327	327	288	20	17	2	.....	.....	.....
Clerks, etc.....	3,014	3,012	1,889	115	966	36	5	1	2
Wage earners (average number).....	33,959	33,914	21,180	5,263	7,040	278	122	41	45
Wage earners by occupation (Dec. 15):									
Above ground (total).....	26,873	26,806	22,615	2,174	1,454	397	111	55	67
Below ground (total).....	11,338	11,333	.....	4,580	6,746	.....	7	.....	5
Foremen, shift bosses, etc.—									
Above ground.....	198	197	.....	117	63	11	3	3	1
Below ground.....	291	291	.....	151	140	.....	.....	.....	.....
Enginemen, hoistmen, electricians, mechanics, etc.—									
Above ground.....	13,882	13,837	12,534	674	578	44	3	4	45
Below ground.....	124	124	.....	58	66	.....	.....	.....	.....
Miners, quarrymen, and drillmen, including their helpers—									
Above ground.....	238	238	.....	1	101	72	47	17	.....
Below ground.....	6,150	6,145	.....	2,064	4,086	.....	5	.....	5
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—									
Above ground.....	297	297	.....	27	226	33	11	.....	.....
Below ground.....	2,771	2,771	.....	925	1,844	.....	2	.....	.....
Muckers, loaders, laborers, and others not classified—									
Above ground.....	11,074	11,063	10,081	214	498	237	10	25	21
Below ground.....	2,002	2,002	.....	1,302	610	.....	.....	.....	.....
Wage earners employed in mills and beneficiating plants—									
Above ground.....	1,184	1,184	.....	1,141	.....	.....	37	6	.....
Mineral and oil land operated..... acres..	1,850,229	1,844,305	1,730,661	4,914	104,936	1,099	1,625	1,070	5,924
Land controlled, total..... acres..	1,856,909	1,849,985	1,730,661	4,994	110,536	1,099	1,625	1,070	5,924
Mineral and oil land owned.....	192,921	192,771	163,546	.....	28,729	394	1,265	837	150
Mineral and oil land leased.....	1,667,820	1,651,746	1,567,115	4,994	78,339	705	390	233	5,774
Timber and other lands owned and leased.....	5,468	5,468	.....	.....	5,468	.....	.....	.....	.....
Power used: Aggregate horsepower.....	449,234	448,173	353,234	55,182	36,483	2,076	498	700	1,061
Prime movers (horsepower, total).....	416,842	415,781	340,243	33,324	30,140	1,876	498	700	1,061
Steam engines—									
Number.....	2,666	2,649	2,209	127	277	23	7	6	17
Horsepower.....	100,569	99,792	57,826	10,210	29,187	1,545	454	570	777
Steam turbines—									
Number.....	4	4	.....	.....	4	.....	.....	.....	.....
Horsepower.....	700	700	.....	.....	700	.....	.....	.....	.....
Internal-combustion engines—									
Number.....	9,617	9,603	9,328	227	81	8	2	7	14
Horsepower.....	316,273	314,989	291,417	22,814	253	331	44	130	284
Water wheels and turbines—									
Number.....	2	2	.....	.....	2	.....	.....	.....	.....
Horsepower.....	300	300	.....	.....	300	.....	.....	.....	.....
Purchased power (horsepower, total).....	32,392	32,392	3,991	21,858	6,343	200	.....	.....	.....
Electric motors operated by purchased current—									
Number.....	695	695	139	346	207	3	.....	.....	.....
Horsepower.....	31,492	31,492	3,091	21,858	6,343	200	.....	.....	.....
Other equipment operated by purchased power—									
Horsepower.....	900	900	900	.....	.....	.....	.....	.....	.....
Electric motors run by current generated by enterprise using:									
Number.....	207	207	41	13	142	.....	11	.....	.....
Horsepower.....	6,101	6,161	394	490	5,159	.....	118	.....	.....
Fuel used:									
Coal, bituminous..... tons, 2,000 pounds..	282,539	280,339	7,209	90,022	177,267	3,615	1,630	596	2,200
Wood..... cords..	110	110	70	40	.....	.....	.....	.....	.....
Fuel oils..... barrels..	239,966	237,780	186,922	21,627	.....	13,518	12,435	3,278	2,186
Gasoline and other volatile oils..... barrels..	21,011	21,011	17,336	2,064	507	275	626	203	.....
Natural gas..... 1,000 cubic feet..	16,392,807	16,338,709	15,134,427	1,049,381	154,570	331	.....	.....	54,098

<sup>1</sup> Includes 1 reduction mill operated independently of mines and 4 operations on dumps and old tailings.  
<sup>2</sup> Includes enterprises as follows: Abrasive materials, 2; asphalt, 2; granite, 6; sandstone, 2.  
<sup>3</sup> Includes enterprises as follows: Lead and zinc, 2; petroleum and natural gas, 28.  
<sup>4</sup> Includes 2 females reported by 2 enterprises.

## OREGON.

Oregon, which ranks ninth among the states in size (land area 95,607 square miles) and thirty-fourth in population (783,389 in 1920), ranked fortieth in value of mineral products for 1919. The state ranked forty-second in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total amount received for products by operators of mines and quarries in Oregon in 1919 was \$1,884,871, an increase of 58.2 per cent over the value reported by the census for the year 1909. This increase and the increases in wages and cost of supplies and materials and fuel and power, as shown in Table 1, can not properly be used as a measure of growth or progress in mining during the decade. Nor, on the other hand, do the large decreases in number of enterprises and individual mines and quarries operated and in capital invested indicate notable decline in mining as they reflect the temporarily adverse industrial conditions in 1919. For purposes of comparison most significance should be attached to the moderate decrease in the average number of wage earners.

The industries reported for 1919, classified by principal products and listed in the order of value of products, were gold and silver ores, copper ores, gold and platinum from placer mines, basalt, limestone, gypsum, bituminous coal, granite, abrasive materials, chromite, quicksilver, and clay. The mining industries for which statistics can be shown without disclosure of individual operations are ranked according to value of products in Table 2.

The leading mineral industries in Oregon in 1919, the mining of gold and silver from lodes and placers and of copper ores, comprised 27 out of a total of 50 productive enterprises, employed 57.2 per cent of all wage earners in the mining industries, and reported \$1,221,552, or 64.8 per cent of the total value of products. Baker and Grant Counties in eastern Oregon were the principal sources of production; Josephine, Jackson, Curry, and Coos Counties also reported some production. The quarrying industries producing basalt, or traprock, and limestone were second

and third in importance in the state. Together they employed 26.1 per cent of all wage earners in the mineral industries and reported 23 per cent of the total value of products. Unproductive operations for the purpose of mine development were reported for one coal mine and five metalliferous lode mines in Oregon in 1919. These enterprises employed approximately 5 per cent of the aggregate number of wage earners employed in the mining industries and expended for development 5.6 per cent of the aggregate expenditures reported for all mining operations in the state in 1919.

Table 3 shows that 60 per cent of all producing enterprises were incorporated and that these employed 93.4 per cent of the total number of wage earners and reported 94.3 per cent of the total value of products.

The small number of large enterprises, as measured by the average number of wage earners, is shown in Table 4. One copper mine employed more than 50 and one gold mine more than 100 wage earners. Of the other enterprises, 11 employed no wage earners and 37 employed less than 50 and averaged only 12 wage earners each.

The mining enterprises are grouped by prevailing hours of labor per week in Table 5, which shows that a majority of enterprises, employing 39.2 per cent of the total number of wage earners, worked 44 to 53 hours per week; and that more than a third of the enterprises, employing 60.3 per cent of the total number of wage earners, worked 54 to 62 hours per week. The 8-hour day prevailed generally with a 7-day week in the metal-mining industries and a 6-day week in the quarrying industries.

The statistics for wage earners presented in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the mining industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

## MINES AND QUARRIES—OREGON.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	50	116	-56.9	Principal expenses: Salaries..... Wages..... Contract work..... Supplies and materials..... Fuel and power..... Royalties and rents..... Taxes..... Value of products.....	\$147,821	\$124,833	18.4
Number of mines and quarries.....	52	161	-67.7		992,957	705,192	40.8
Persons engaged.....	347	1,072	-21.0		35,888	7,717	355.1
Proprietors and firm members, total.....	37	112	-67.0		545,049	186,796	192.3
Number performing manual labor in or about the mines and quarries.....	20	66	-69.0		183,472	96,562	88.2
Salaried employees.....	70	100	-30.0		48,047	16,985	183.7
Wage earners (average number).....	740	860	-14.0		26,656	12,917	106.4
Power used (horsepower).....	6,264	8,070	-22.4		1,884,871	1,191,512	58.2
Capital.....	\$4,780,913	\$3,166,834	-47.8				

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	50	740	100.0	\$1,884,871	100.0	Limestone.....	4	69	9.3	\$138,708	7.4
Gold and silver, lode and placer mines, and copper.....	27	423	57.2	1,221,552	64.8	Coal, bituminous.....	3	63	8.5	63,566	3.4
Basalt.....	9	124	16.8	294,812	15.6	All other industries <sup>1</sup> .....	7	61	8.2	165,233	8.8

<sup>1</sup> Includes enterprises in industries as follows: Abrasive materials, 1; chromite, 1; clay, 1; granite, 2; gypsum, 1; quicksilver, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	50	740	\$1,884,871	\$37,697	100.0	100.0	100.0
Corporation.....	30	691	1,777,720	59,257	60.0	93.4	94.3
Individual.....	11	23	62,168	5,652	22.0	3.1	3.3
Firm <sup>1</sup> .....	9	26	44,983	4,998	18.0	8.5	2.4
GOLD AND SILVER, LODGE AND PLACER MINES, AND COPPER.....	27	423	1,221,552	45,243	100.0	100.0	100.0
Corporation.....	14	401	1,180,534	84,324	51.9	94.8	96.6
Individual.....	5	1	4,457	891	18.5	0.2	0.4
Firm <sup>1</sup> .....	8	21	36,561	4,670	29.6	5.0	3.0
BASALT AND LIMESTONE.....	13	198	433,520	33,348	100.0	100.0	100.0
Corporation.....	10	180	402,304	40,230	78.9	98.3	92.8
Individual <sup>2</sup> .....	3	13	31,216	10,405	23.1	6.7	7.2

<sup>1</sup> Includes 1 other form of organization.

<sup>2</sup> Includes 1 firm.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	50	100.0	740	100.0	BASALT.....	9	100.0	124	100.0
No wage earners.....	11	22.0	.....	.....	1 to 5.....	2	22.2	9	7.3
1 to 5.....	13	26.0	39	5.3	6 to 20.....	5	55.6	56	45.2
6 to 20.....	17	34.0	184	24.9	21 to 50.....	2	22.2	59	47.6
21 to 50.....	7	14.0	223	30.1	LIMESTONE.....	4	100.0	60	100.0
51 to 100.....	1	2.0	78	10.5	1 to 5.....	1	25.0	4	5.8
101 to 500.....	1	2.0	216	29.2	6 to 20.....	1	25.0	7	10.1
GOLD AND SILVER, LOBE AND PLACER MINES, AND COPPER.....	27	100.0	428	100.0	21 to 50.....	2	50.0	58	84.1
No wage earners.....	9	33.3	.....	.....	COAL, BITUMINOUS.....	3	100.0	63	100.0
1 to 5.....	7	25.9	12	2.8	1 to 5.....	1	33.3	4	6.3
6 to 20.....	8	29.6	96	22.5	6 to 20.....	1	33.3	10	15.9
21 to 50.....	1	3.7	22	5.2	21 to 50.....	1	33.3	49	77.8
51 to 100.....	1	3.7	78	18.4					
101 to 500.....	1	3.7	216	51.1					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
	Enterprises.	Wage earners.	44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries.....	139	740	23	290	14	446	1	1	1	3
Gold and silver, lode and placer mines, and copper.....	18	423	5	25	11	394	1	1	1	3
Basalt.....	9	124	7	107	2	17				
Limestone.....	4	69	4	69						
Coal, bituminous.....	3	63	3	63						
All other industries.....	5	61	4	26	1	35				

<sup>1</sup> Exclusive of 11 enterprises employing no wage earners in industries as follows: Chromite, 1; clay, 1; gold and silver, lode and placer mines, and copper, 9.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	776	638	592	587	603	723	735	832	916	999	962	879	847	58.8
Producing enterprises.....	740	617	565	555	580	695	721	810	899	924	912	826	796	59.4
Gold and silver, lode and placer mines, and copper.....	423	423	361	362	366	423	436	462	449	487	457	431	419	74.1
Basalt.....	124	58	69	70	88	101	108	147	207	214	190	127	99	27.1
Limestone.....	69	40	36	21	19	43	55	75	36	77	119	115	143	13.4
Coal, bituminous.....	63	63	64	63	60	60	58	50	60	60	71	68	63	61.0
All other industries.....	61	35	35	39	47	68	66	76	77	87	75	75	54	37.9
Nonproducing enterprises.....	36	21	27	32	23	27	14	22	47	65	50	53	51	21.5



## MINES AND QUARRIES—OREGON.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.						Nonproducing enterprises. <sup>2</sup>
		Total.	Gold and silver, lode and placer mines, and copper.	Basalt.	Limestone.	Coal, bituminous.	All other. <sup>1</sup>	
Number of enterprises.....	56	50	27	9	4	3	7	6
Number of mines and quarries.....	58	52	29	9	4	3	7	6
Capital.....	\$5,872,563	\$4,780,913	\$2,759,342	\$477,054	\$372,501	\$698,690	\$478,326	\$1,091,640
Principal expenses:								
Salaries and wages—								
Officers.....	\$31,299	\$31,299	\$19,740	\$9,417			\$2,142	
Superintendents and managers.....	\$79,788	\$77,083	\$52,972	\$11,160	\$4,350	\$2,400	\$6,206	\$2,700
Technical employees.....	\$17,867	\$17,065	\$14,665				\$2,400	\$902
Clerks, etc.....	\$23,769	\$22,369	\$9,300	\$4,840		\$1,800	\$6,429	\$1,400
Wage earners.....	\$1,088,820	\$922,957	\$575,373	\$186,123	\$60,868	\$91,549	\$76,044	\$45,863
Supplies and materials.....	\$508,623	\$545,949	\$341,410	\$102,114	\$63,063	\$4,253	\$35,080	\$47,674
Fuel.....	\$70,098	\$68,689	\$18,887	\$21,591	\$7,109	\$14,606	\$6,496	\$1,409
Power.....	\$64,783	\$64,783	\$58,366	\$5,121	\$269		\$2,963	
Royalties and rents.....	\$48,047	\$48,047	\$33,509	\$2,238	\$3,926	\$1,840	\$6,534	
Taxes.....	\$28,445	\$28,445	\$18,472	\$3,548		\$1,892	\$2,420	\$1,789
Contract work.....	\$50,362	\$35,888	\$14,349		\$824	\$10,217	\$11,322	\$14,474
Expenditures for development (included in the above items).....	\$320,209	\$305,972	\$179,798	\$420		\$3,806	\$21,948	\$114,237
Value of products.....	\$1,884,871	\$1,884,871	\$1,221,552	\$294,812	\$138,708	\$63,566	\$166,233	
Persons engaged in industry.....	889	947	492	142	72	67	74	42
Proprietors and firm members (total).....	38	37	29	3	1	2	2	1
Number performing manual labor.....	20	20	17	2			1	
Salaried officers.....	9	9	6	3				2
Superintendents and managers.....	38	36	21	7	2	1	5	1
Technical employees.....	10	9	1				1	1
Clerks, etc.....	18	16	6	5			5	2
Wage earners (average number).....	776	740	423	124	69	63	61	36
Wage earners by occupation (Dec. 15):								
Above ground (total).....	675	651	240	173	158	20	60	24
Below ground (total).....	377	322	256			63	3	55
Foremen, shift bosses, etc.—								
Above ground.....	29	27	11	9	3	2	2	2
Below ground.....	15	13	12			1		2
Enginemen, hoistmen, electricians, mechanics, etc.—								
Above ground.....	104	101	53	24	8	13	3	3
Below ground.....	39	37	32			5		3
Miners, quarrymen, and drillmen, including their helpers—								
Above ground.....	120	114	8	33	57		16	6
Below ground.....	169	139	97			40	2	30
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—								
Above ground.....	53	52	25	35	20	1	1	6
Below ground.....	63	60	46			14		3
Muckers, loaders, laborers, and others not classified—								
Above ground.....	232	225	74	72	70	1	8	7
Below ground.....	91	73	69			3	1	18
Wage earners employed in mills and beneficiating plants—								
Above ground.....	102	102	69			3	30	
Number of females included in wage earners reported above—								
Above ground.....	9	9	4	2	1		2	
Mineral land operated..... acres.....	26,993	22,963	13,667	3,871	1,509	1,199	2,747	4,080
Land controlled, total..... acres.....	28,673	24,643	15,347	3,871	1,509	1,199	2,747	4,080
Mineral land owned.....	19,132	16,472	12,729	262	1,219	924	1,347	2,660
Mineral land leased.....	7,961	6,591	1,047	3,009	290	245	1,400	1,370
Timber and other lands owned and leased.....	1,580	1,580	1,580					
Power used: Aggregate horsepower.....	6,499	6,264	3,894	1,295	35	393	657	235
Prime movers (horsepower, total).....	1,314	1,579	450	692	10	375	52	235
Steam engines—								
Number.....	30	27	3	18		6		3
Horsepower.....	1,311	1,501	140	686		375		110
Internal-combustion engines—								
Number.....	10	9	4	1	2		2	1
Horsepower.....	161	141	73	6	10		52	20
Water wheels and turbines—								
Number.....	12	10	10					2
Horsepower.....	342	237	237					105
Purchased power (horsepower, total).....	4,685	4,685	3,444	593	25	18	605	
Electric motors operated by purchased current—								
Number.....	111	111	88	10	1	3	9	
Horsepower.....	4,685	4,685	3,444	593	25	18	605	
Electric motors run by current generated by enterprise using:								
Number.....	22	22	7			15		
Horsepower.....	464	464	109			355		
Fuel used:								
Coal, bituminous..... tons, 2,000 pounds.....	5,280	5,280	161	250		4,869		
Wood..... cords.....	4,098	3,683	1,580	1,752			104	330
Fuel oil..... barrels.....	6,548	6,548	290	4,220			2,038	
Gasoline and other volatile oils..... barrels.....	710	662	259	6	321		76	48

<sup>1</sup> Includes enterprises as follows: Abrasive materials, 1; chromite, 1; clay, 1; granite, 2; gypsum, 1; quicksilver, 1.  
<sup>2</sup> Includes enterprises as follows: Coal, bituminous, 1; gold, silver, copper, lead and zinc, lode mines, 5.

## PENNSYLVANIA.

Pennsylvania, which ranks thirty-second among the states in size (land area 44,832 square miles) and second in population (8,720,017 in 1920), ranked first in the value of mineral products for 1919. The state also ranked first in the number of enterprises in the mineral industries, in the total number of persons engaged in them, and in the average number of wage earners employed.

The gross value of products of all mines, quarries, and wells in Pennsylvania in 1919 was \$819,451,109. This amount includes, in addition to the value of the principal mineral products, \$353,607, the value of mineral by-products; \$253,371, the value of other unspecified products; and \$1,276,785 received for power sold and for work or miscellaneous services for other enterprises. The gross value of products also includes duplication to the amount of \$433,318, the value of anthracite coal sold by some operators to others who resold it after preparing it for market, and \$5,077,115, the value of natural gas sold by some producers to others who used it as material or resold it and included the value of this gas in their reports on value of products. Deducting these duplications leaves \$813,940,676 as the net value of products for 1919.

The gross value of products for 1919 is an increase of 134.8 per cent, and the net value is an increase of 135.3 per cent as compared with the corresponding values reported at the census of 1909. The 1909 census of mines and quarries included data on coke manufacture with the statistics on coal-mining operations and, therefore, the value of products reported by the 1909 census includes approximately \$18,000,000, the value added by the manufacture of coke, which has no counterpart in the statistics for 1919. Taking into consideration this difference, the value of products reported for 1919 was approximately 150 per cent greater than the comparable amount for 1909.

The increase in value of products and the increases in wages, cost of supplies and materials and fuel and power, as shown in Table 1, are in large part due to general price increases during the census interval. They are, therefore, not a correct measure of the growth of mining but they do indicate progress as is also indicated by the increases in number of enterprises and number of individual mines and quarries operated. These increases preclude the interpretation of the small decrease in average number of wage earners as marking a decline in mining.

The mining industries reported in Pennsylvania in 1919, classified according to principal products and listed in order of value of products, were anthracite coal, bituminous coal, petroleum and natural gas, limestone, sandstone, slate, clay, basalt, iron ore, granite, mineral pigments, abrasive materials, talc and soapstone, silica, graphite, and lead and zinc. The industries for which statistics can be shown without dis-

closure of individual operations are ranked by value of products in Table 2. The leading industries engaged in the production of the fuels, anthracite and bituminous coal and petroleum and natural gas, accounted for 96.8 per cent of the total value of products for the state.

The leading mineral industry in Pennsylvania in 1919 as determined by value of products was the production of anthracite coal. All the coal-mining enterprises classified by the census of 1919 as anthracite were in Pennsylvania. Anthracite is also mined in the Rocky Mountain Province but, for convenience and to avoid disclosure of individual operations, the data for such anthracite production are included with statistics for bituminous coal. The Pennsylvania anthracite region is restricted to 10 eastern counties in which it occupies areas aggregating approximately 500 square miles. The 254 enterprises reported in this industry include the following: 156 colliery enterprises, which operated 374 mines, 245 breakers, and 60 culm washeries; 19 enterprises, which operated 19 culm washeries independently of mines; and 79 enterprises, which operated 81 river dredges. The average number of wage earners employed in these enterprises was 147,372, or 45.6 per cent of the total number in the mining industries of the state, and the gross value of products reported was \$364,084,142, or 44.4 per cent of the total value of the mineral products of the state.

The mining of bituminous coal was second in importance in 1919 on the basis of value of products and first on that of the average number of wage earners employed. One-third of the mining enterprises in Pennsylvania were engaged in this industry, employed 154,992 wage earners, or 47.9 per cent of the total number, and reported products valued at \$362,973,952, or 44.3 per cent of the total for the state. The output of bituminous coal for this state was nearly one-third of the total for the United States. The bituminous coal field of Pennsylvania, which is continuous with the coal fields of Ohio, West Virginia, and Maryland, embraces the northeastern part of the Appalachian Coal Province and extends over most of the western part of the state. The productive area occupies some 12,000 square miles in 27 counties, 6 of which, in the southwestern part of the state, reported more than three-fourths of the total product. The coals mined are bituminous and semibituminous in varieties suitable for all uses. In addition to coal, 11 enterprises in this industry produced clay as a by-product which was valued at \$118,166, and 34 enterprises reported receipts for power sold and for work or miscellaneous services for other enterprises which amounted to \$684,924.

The production of petroleum and natural gas was third in importance among the mineral industries in

Pennsylvania in 1919, and the state ranked sixth in the United States in this industry. There were 3,140 productive enterprises, or 54.1 per cent of the total number in the state. They employed, however, only 2.8 per cent of the total number of wage earners and reported products valued at \$66,271,961, or only 8.1 per cent of the total for the state. The statistics for this industry include data on the operation of plants engaged in the extraction of gasoline from natural gas, whether such plants were connected with well operations or operated independently. The productive petroleum and natural-gas area in Pennsylvania is limited chiefly to a belt occupying approximately 10,000 square miles extending northeastward across the state from the southwest corner. There is also a gas-producing zone along the shore of Lake Erie. The production of petroleum and natural gas in 1919 was from 24 counties.

The industries fourth, fifth, and sixth in importance in Pennsylvania were the quarrying of limestone, sandstone, and slate in which Pennsylvania ranked first among the states. These industries, together with basalt and granite quarrying, employed practically 10,000 wage earners, or 3 per cent of the total number, and reported products valued at \$21,801,754, or 2.7 per cent of the total value of products. In addition to the products indicated by the industry designations the quarrying enterprises in the state reported other mineral products valued at \$281,590, including a small amount of lime manufactured at limestone quarries and not included in the census of manufactures. This amount and also \$118,000 received for power sold or for work or miscellaneous services for other enterprises are included in the total value of products reported for these industries.

Clay mining was seventh in importance in Pennsylvania in 1919 and the state ranked first in the clay industry in the United States. Twelve of the clay enterprises reported coal valued at \$161,321 as a by-product of clay mining.

Although small in comparison with other mining industries in the state, the production of mineral pigments in Pennsylvania was important and outranked production from other states.

Work on unproductive mineral properties for the purpose of development was reported in 1919 by 10 coal-mining and 3 petroleum and natural-gas enterprises. These enterprises, with a combined capital of \$3,244,212, employed 110 wage earners and expended \$301,516 for development.

The producing mining enterprises in Pennsylvania in 1919 are classified according to character of organization in Table 3 which shows that, although the corporations numbered less than one-third of the enterprises in the state, they conducted by far the largest operations, employing 92.4 per cent of the wage earners, and reporting 91.4 per cent of the total value of products. The petroleum and natural-gas industry which in-

cluded a majority of the enterprises in the state was unique in that incorporated enterprises numbered less than 10 per cent of the total in the industry. Nevertheless the corporations outclassed other forms of organization in both wage earners employed and value of products. The enterprises in the anthracite and bituminous coal-mining industries, in clay mining, and in most of the quarrying industries were largely in the hands of corporations.

The relatively large number of small enterprises as measured by the average number of wage earners employed is shown in Table 4. Of the total number of mining enterprises in Pennsylvania, 25.9 per cent employed no wage earners and 66.1 per cent of the enterprises had fewer than 101 each and the wage earners employed were only 15.3 per cent of the total number of wage earners. On the other hand, only 459 enterprises, or 7.9 per cent of the total number, had more than 100 wage earners each and employed 84.7 per cent of the total number of wage earners. The petroleum and natural-gas industry included practically all of the enterprises having no wage earners and two-thirds of the enterprises having less than 6. In this industry only 161 enterprises, or 5.1 per cent, employed 6 or more wage earners each. Very large enterprises having more than 1,000 wage earners each were reported only in the anthracite and bituminous coal-mining industries.

Table 5 shows that in a majority of enterprises employing wage earners and for 91.1 per cent of the wage earners the hours of labor were 44 to 53 per week. These hours were the rule in the anthracite and bituminous coal-mining industries in which the 8-hour day and 6-day week prevailed. In the petroleum and natural-gas industry a large number of enterprises which, however, employed few wage earners each, required less than 44 hours per week, while 62.1 per cent of the wage earners in this industry worked more than 53 hours per week. In the quarrying industries the prevailing hours of labor were 54 to 62 per week and a majority of the enterprises reported the 10-hour day and 6-day week.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The minimum shown for the bituminous coal industry in November, which was due to the great strike in that industry, was abnormal both as to the amount by which it differs from the maximum and as to the time of year. The normal minimum in this industry is to be expected in the spring. The degree of unemployment in the coal-mining industry in November, 1919, accounts for the minimum in that month in the statistics for all mining industries combined.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

MINES AND QUARRIES—PENNSYLVANIA.

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TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	5,807	4,851	19.7	Capital.....	\$1,817,519,289	\$986,207,208	52.1
Number of mines and quarries.....	3,621	3,000	20.7	Principal expenses:			
Number of petroleum and natural-gas wells.....	77,325	59,780	29.3	Salaries.....	34,964,478	13,057,340	167.8
Number of natural-gas-gasoline plants.....	319			Wages.....	445,218,643	197,473,862	125.5
Persons engaged.....	350,338	381,965	-8.3	Contract work.....	7,970,425	5,976,032	33.4
Proprietors and firm members, total.....	8,822	9,180	-3.4	Supplies and materials <sup>2</sup> .....	124,827,767	48,274,254	157.5
Number performing manual labor in or about the mines, quarries, and wells.....	2,126	2,113	0.6	Fuel and power.....	27,707,408	6,423,190	331.4
Salaried employees.....	18,119	11,723	54.6	Royalties and rents.....	24,682,827	15,379,127	60.5
Wage earners (average number).....	323,397	361,013	-10.4	Taxes.....	28,747,401	5,699,466	404.4
Power used (horsepower).....	1,999,422	1,618,806	23.5	Value of products.....	819,451,109	349,069,786	134.8

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes the cost of coal and natural gas purchased as material or for resale.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	5,807	323,397	100.0	\$819,451,109	100.0	Slate.....	42	1,892	0.6	2,651,533	0.3
Coal, anthracite.....	254	147,372	45.6	364,064,142	44.4	Clay.....	62	1,537	0.4	2,546,486	0.3
Coal, bituminous.....	1,938	154,992	47.9	362,973,952	44.3	Basalt.....	29	721	0.2	2,288,791	0.3
Petroleum and natural gas.....	3,140	9,065	2.8	66,271,961	8.1	Granite.....	29	197	0.1	436,054	0.1
Limestone.....	184	5,573	1.7	12,861,213	1.6	Mineral pigments.....	13	115	( <sup>1</sup> )	344,739	( <sup>1</sup> )
Sandstone.....	100	1,673	0.5	3,534,568	0.4	Silica.....	4	43	( <sup>1</sup> )	54,367	( <sup>1</sup> )
						All other industries <sup>2</sup> .....	12	417	0.1	1,373,209	0.2

<sup>1</sup> Less than one-tenth of 1 per cent.

<sup>2</sup> Includes enterprises in industries as follows: Abrasive materials, 1; graphite, 3; iron ore, 5; lead and zinc, 1; talc and soapstone, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	5,807	323,397	\$819,451,109	\$141,114	100.0	100.0	100.0
Corporation.....	1,708	298,807	748,797,805	439,952	29.2	92.4	91.4
Individual.....	1,789	10,372	28,461,348	16,089	30.5	8.2	3.5
Firm.....	2,086	12,265	34,778,863	16,916	35.4	3.8	4.2
Other.....	280	1,963	7,413,063	26,475	4.8	0.6	0.9
COAL, ANTHRACITE.....	254	147,372	364,064,142	1,433,402	100.0	100.0	100.0
Corporation.....	170	143,615	355,328,907	2,090,170	64.9	97.4	97.0
Individual.....	37	431	962,441	26,012	14.6	0.3	0.3
Firm.....	42	2,879	6,741,024	160,501	16.6	2.0	1.9
Other.....	5	447	1,061,770	210,354	2.0	0.3	0.3
COAL, BITUMINOUS.....	1,938	154,992	362,973,952	187,268	100.0	100.0	100.0
Corporation.....	1,000	139,535	328,281,965	328,382	51.6	90.0	90.5
Individual.....	457	7,706	17,487,290	35,908	25.1	5.0	4.8
Firm.....	440	6,870	15,362,035	34,891	22.7	4.4	4.2
Other.....	11	881	1,782,662	159,338	0.6	0.6	0.5
PETROLEUM AND NATURAL GAS.....	3,140	9,065	66,271,961	21,106	100.0	100.0	100.0
Corporation.....	296	6,230	44,016,627	149,209	9.4	68.6	68.4
Individual.....	1,102	1,094	7,847,063	7,121	35.1	12.1	11.8
Firm.....	1,485	1,428	10,688,470	7,196	47.3	15.7	16.1
Other.....	258	396	3,722,781	14,499	8.2	3.6	5.0
LIMESTONE.....	184	5,573	12,861,213	70,007	100.0	100.0	100.0
Corporation.....	69	4,382	10,611,390	183,788	37.5	78.1	82.4
Individual.....	76	682	1,263,417	16,624	41.3	12.2	9.8
Firm <sup>1</sup> .....	39	539	1,008,416	26,806	21.2	9.7	7.8
SANDSTONE.....	100	1,673	3,534,568	35,346	100.0	100.0	100.0
Corporation.....	52	1,238	2,733,682	52,571	52.0	74.0	77.3
Individual.....	26	156	281,979	11,279	28.9	9.3	8.0
Firm.....	23	279	518,902	22,561	23.0	16.7	14.7

<sup>1</sup> Includes 2 other forms of organization.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919—Con.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
<b>SLATE</b> .....	42	1,892	\$2,651,533	\$63,132	100.0	100.0	100.0
Corporation.....	34	1,706	2,451,467	72,102	81.0	90.2	92.5
Individual.....	3	68	74,715	24,905	7.1	3.6	2.8
Firm.....	5	118	125,351	25,070	11.9	6.2	4.7
<b>CLAY</b> .....	62	1,337	2,546,485	41,072	100.0	100.0	100.0
Corporation.....	43	1,122	2,107,899	49,021	69.4	83.9	82.8
Individual.....	8	63	111,979	13,997	12.9	4.7	4.4
Firm <sup>1</sup> .....	11	152	326,607	29,692	17.7	11.4	12.8
<b>BASALT</b> .....	29	721	2,298,791	79,269	100.0	100.0	100.0
Corporation.....	16	660	2,108,543	131,784	55.2	91.5	91.7
Individual.....	10	48	164,690	16,469	34.5	6.7	7.2
Firm <sup>2</sup> .....	3	13	25,558	8,519	10.3	1.8	1.1
<b>GRANITE</b> .....	29	197	435,654	15,023	100.0	100.0	100.0
Corporation.....	6	86	179,383	29,897	20.7	43.7	41.2
Individual.....	16	82	181,980	11,374	53.2	41.6	41.8
Firm.....	7	29	74,291	10,613	24.1	14.7	17.1
<b>MINERAL PIGMENTS</b> .....	13	115	344,739	26,518	100.0	100.0	100.0
Corporation.....	8	82	253,205	31,651	61.5	71.3	73.4
Firm <sup>3</sup> .....	5	33	91,534	18,307	38.5	28.7	26.6

<sup>1</sup> Includes 2 other forms of organization.

<sup>2</sup> Includes 1 other form of organization.

<sup>3</sup> Includes 2 individuals.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	5,807	100.0	323,397	100.0	<b>SLATE</b> .....	42	100.0	1,892	100.0
No wage earners.....	1,506	25.9	.....	.....	6 to 20.....	11	26.2	117	6.2
1 to 5.....	2,243	38.6	4,301	1.3	21 to 50.....	20	47.6	669	35.4
6 to 20.....	830	14.3	9,247	2.9	51 to 100.....	7	16.7	321	27.5
21 to 50.....	496	8.5	15,947	4.9	101 to 500.....	4	9.5	585	30.9
51 to 100.....	273	4.7	20,049	6.2	<b>SANDSTONE</b> .....	100	100.0	1,673	100.0
101 to 500.....	355	6.1	78,772	24.4	No wage earners.....	2	2.0	.....	.....
501 to 1,000.....	63	1.1	42,817	13.2	1 to 5.....	40	40.0	106	6.3
Over 1,000.....	41	0.7	152,264	47.1	6 to 20.....	36	36.0	394	23.6
<b>COAL, BITUMINOUS</b> .....	1,938	100.0	154,992	100.0	21 to 50.....	14	14.0	455	27.2
No wage earners.....	11	0.6	.....	.....	51 to 100.....	5	5.0	342	20.4
1 to 5.....	554	28.6	1,557	1.0	101 to 500.....	3	3.0	376	22.5
6 to 20.....	436	22.5	5,702	3.7	<b>CLAY</b> .....	62	100.0	1,337	100.0
21 to 50.....	363	18.7	11,764	7.6	1 to 5.....	9	14.5	33	2.5
51 to 100.....	216	11.1	15,792	10.2	6 to 20.....	32	51.6	396	29.6
101 to 500.....	263	13.6	55,281	35.7	21 to 50.....	16	25.8	519	38.8
501 to 1,000.....	26	1.3	17,742	11.4	51 to 100.....	5	8.1	389	29.1
Over 1,000.....	19	1.0	47,154	30.4	<b>BASALT</b> .....	29	100.0	721	100.0
<b>COAL, ANTHRACITE</b> .....	254	100.0	147,872	100.0	1 to 5.....	7	24.1	13	1.8
No wage earners.....	2	0.8	.....	.....	6 to 20.....	11	37.9	93	12.9
1 to 5.....	63	24.4	139	0.1	21 to 50.....	7	24.1	230	31.9
6 to 20.....	39	15.4	499	0.3	51 to 100.....	1	3.4	55	7.6
21 to 50.....	20	7.9	629	0.4	101 to 500.....	3	10.4	330	45.8
51 to 100.....	13	5.1	981	0.7	<b>GRANITE</b> .....	29	100.0	197	100.0
101 to 500.....	63	24.8	18,240	12.4	1 to 5.....	7	24.1	20	10.2
501 to 1,000.....	33	13.0	21,804	14.8	6 to 20.....	20	69.0	122	61.9
Over 1,000.....	22	8.7	105,110	71.3	21 to 50.....	2	6.9	55	27.9
<b>PETROLEUM AND NATURAL GAS</b> .....	3,140	100.0	9,065	100.0	<b>MINERAL PIGMENTS</b> .....	13	100.0	115	100.0
No wage earners.....	1,437	47.4	.....	.....	No wage earners.....	1	7.7	.....	.....
1 to 5.....	1,403	47.5	2,264	25.0	1 to 5.....	4	30.8	13	11.3
6 to 20.....	122	3.9	1,157	12.8	6 to 20.....	7	53.8	70	60.9
21 to 50.....	23	0.7	749	8.3	21 to 50.....	1	7.7	32	27.3
51 to 100.....	7	0.2	554	6.1	<b>LIMESTONE</b> .....	184	100.0	5,573	100.0
101 to 500.....	5	0.2	1,070	11.8	No wage earners.....	2	1.1	.....	.....
501 to 1,000.....	4	0.1	3,271	36.1	1 to 5.....	64	34.8	144	2.6
<b>LIMESTONE</b> .....	184	100.0	5,573	100.0	6 to 20.....	59	32.1	635	11.4
No wage earners.....	2	1.1	.....	.....	21 to 50.....	28	15.2	790	14.2
1 to 5.....	64	34.8	144	2.6	51 to 100.....	19	10.3	1,415	25.4
6 to 20.....	59	32.1	635	11.4	101 to 500.....	12	6.5	2,589	46.5
21 to 50.....	28	15.2	790	14.2					
51 to 100.....	19	10.3	1,415	25.4					
101 to 500.....	12	6.5	2,589	46.5					



## MINES AND QUARRIES—PENNSYLVANIA.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.					
		Total.	Coal.		Petroleum and natural gas. <sup>1</sup>	Limestone.	Sandstone.
			Anthracite.	Bituminous.			
Number of enterprises.....	5,820	5,807	254	1,938	3,140	184	100
Number of mines and quarries.....	3,631	3,621	534	2,584		200	107
Number of petroleum and natural-gas wells.....	77,325	77,325			77,325		
Number of natural-gas gasoline plants.....	319	319			319		
<b>Capital.....</b>	<b>\$1,320,763,601</b>	<b>\$1,317,519,289</b>	<b>\$433,868,089</b>	<b>\$648,626,810</b>	<b>\$201,186,270</b>	<b>\$12,941,006</b>	<b>\$6,775,667</b>
<b>Principal expenses:</b>							
<b>Salaries and wages—</b>							
Officers.....	\$8,266,738	\$8,263,538	\$1,275,904	\$5,989,638	\$605,560	\$116,395	\$63,185
Superintendents and managers.....	\$13,698,308	\$13,665,082	\$5,149,017	\$8,516,065	\$849,044	\$284,083	\$98,799
Technical employees.....	\$2,579,708	\$2,561,196	\$1,425,614	\$995,268	\$92,776	\$21,508	\$14,589
Clerks, etc.....	\$10,476,102	\$10,474,657	\$4,146,934	\$5,015,500	\$995,580	\$6,824,164	\$54,553
Wage earners.....	\$145,353,348	\$145,218,643	\$210,289,478	\$211,345,693	\$10,219,433	\$2,758,379	\$1,688,674
Supplies and materials.....	\$118,983,907	\$118,817,334	\$59,738,376	\$44,912,367	\$8,962,983	\$2,758,379	\$695,266
Cost of coal and natural gas purchased as material and for resale.....	\$5,510,483	\$5,510,483	\$433,318	\$5,077,165			
Fuel.....	\$21,819,600	\$21,818,407	\$11,406,117	\$7,599,689	\$1,566,224	\$559,646	\$915,428
Power.....	\$5,890,320	\$5,888,996	\$1,890,825	\$3,529,701	\$21,826	\$255,957	\$82,522
Royalties and rents.....	\$24,683,377	\$24,682,827	\$11,766,598	\$8,008,527	\$5,170,090	\$234,488	\$58,206
Taxes.....	\$28,787,625	\$28,747,401	\$14,080,963	\$12,268,433	\$1,935,648	\$247,700	\$75,607
Contract work.....	\$8,011,641	\$7,970,425	\$1,557,845	\$618,094	\$5,823,072	\$194,748	\$2,484
Expenditures for development (included in the above items).....	\$25,232,489	\$24,930,973	\$6,189,990	\$8,344,445	\$9,704,215	\$199,199	\$39,411
Value of products.....	\$819,451,109	\$810,451,109	\$364,064,142	\$362,973,952	\$66,271,961	\$12,881,213	\$3,534,563
<b>Persons engaged in industry.....</b>	<b>350,490</b>	<b>350,338</b>	<b>154,882</b>	<b>165,044</b>	<b>17,255</b>	<b>6,036</b>	<b>1,898</b>
Proprietors and firm members (total).....	8,840	8,822	159	1,748	6,548	165	78
Number performing manual labor.....	2,129	2,126	34	575	1,429	44	20
Salaried officers.....	2,044	2,042	233	1,410	227	49	34
Superintendents and managers.....	6,083	6,077	2,821	2,480	451	113	56
Technical employees.....	1,563	1,560	907	572	54	7	.....
Clerks, etc.....	8,453	8,450	3,390	3,847	910	129	57
Wage earners (average number).....	323,507	323,367	147,372	154,992	9,085	5,573	1,673
<b>Wage earners by occupation (Dec. 15):</b>							
Above ground (total).....	95,998	95,748	46,618	28,639	9,417	5,217	1,872
Below ground (total).....	255,844	255,822	106,626	148,458		663	
Foremen, shift bosses, etc.—							
Above ground.....	2,069	2,063	435	1,219		194	77
Below ground.....	4,805	4,803	1,098	3,663		8	
Enginemen, hoistmen, electricians, mechanics, etc.—							
Above ground.....	27,316	27,305	10,488	8,966	6,483	720	164
Below ground.....	11,398	11,398	4,331	7,042		20	
Miners, quarrymen, and drillmen, including their helpers—							
Above ground.....	5,334	5,305	138	1,609		2,072	506
Below ground.....	151,957	151,949	59,401	91,575		171	
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—							
Above ground.....	7,274	7,219	2,769	3,409		400	108
Below ground.....	41,010	41,006	17,325	23,457		78	
Muckers, loaders, laborers, and others not classified—							
Above ground.....	32,261	32,112	12,291	13,202	2,904	1,799	640
Below ground.....	41,674	41,666	23,470	17,721		386	
Wage earners employed in mills and beneficiating plants—							
Above ground.....	21,744	21,744	20,497	234		62	227
Number of wage earners under 16 years of age included in those reported above—							
Above ground.....	163	162	119	34		5	
Mineral and oil land operated..... acres.....	4,361,129	4,352,082	261,355	1,491,919	2,506,879	31,175	31,469
Land controlled, total..... acres.....	4,734,037	4,724,927	432,075	1,682,398	2,506,879	33,431	36,903
Mineral and oil land owned.....	1,757,769	1,750,822	194,390	1,112,956	396,700	6,165	26,263
Mineral and oil land leased.....	2,617,152	2,615,062	77,955	381,720	2,110,179	26,045	5,226
Timber and other lands owned and leased.....	359,116	359,053	159,710	187,722		2,221	5,424
<b>Power used: Aggregate horsepower.....</b>	<b>1,990,581</b>	<b>1,990,422</b>	<b>899,783</b>	<b>658,963</b>	<b>371,267</b>	<b>30,155</b>	<b>10,844</b>
Prime movers (horsepower, total).....	1,638,707	1,638,599	782,090	444,690	365,082	15,641	8,268
<b>Steam engines—</b>							
Number.....	16,845	16,841	5,298	2,194	8,511	378	149
Horsepower.....	1,274,193	1,274,108	730,141	348,402	156,490	14,516	7,067
<b>Steam turbines—</b>							
Number.....	146	146	45	100		1	
Horsepower.....	137,213	137,213	50,665	86,273		275	
<b>Internal-combustion engines—</b>							
Number.....	14,435	14,433	73	319	13,910	55	28
Horsepower.....	226,536	226,513	1,284	10,015	208,563	800	1,211
<b>Water wheels and turbines—</b>							
Number.....	12	12			2	2	
Horsepower.....	765	765			40	50	
Purchased power (horsepower, total).....	360,874	360,823	117,693	214,273	6,185	14,514	2,576
Electric motors operated by purchased current—							
Number.....	8,526	8,521	1,881	5,953	41	358	100
Horsepower.....	356,221	355,170	117,693	214,206	637	14,514	2,576
Other equipment operated by purchased power—							
Horsepower.....	5,653	5,653		65	5,548		
Electric motors run by current generated by enterprise using:							
Number.....	12,146	12,146	3,801	8,045	203	9	20
Horsepower.....	471,216	471,216	185,723	278,780	2,341	225	1,165
<b>Fuel used:</b>							
Coal, anthracite..... tons, 2,240 pounds.....	8,561,045	8,561,045	8,548,201			702	2,388
Coal, bituminous..... tons, 2,000 pounds.....	3,574,852	3,574,674	4,096	3,304,925	6,602	130,896	41,648
Coke..... tons, 2,000 pounds.....	219	219				179	
Wood..... cords.....	2,376	2,376			1,582	237	87
Fuel oils..... barrels.....	1,608	1,608	671	196	168	201	3
Gasoline and other volatile oils..... barrels.....	13,811	13,801	1,381	5,008	2,447	3,408	288
Natural gas..... 1,000 cubic feet.....	10,047,604	10,047,604		310,914	9,488,454	4,080	145,627

<sup>1</sup> Includes a small operation in New York inseparably combined with report on Pennsylvania operations.

<sup>2</sup> Includes 156 collieries embracing 374 mines, 245 breakers and 60 culm washeries; 19 enterprises operating 19 culm washeries; and 79 enterprises operating 81 river dredges.

<sup>3</sup> Includes 374 mines, 79 culm washeries and 81 river dredges.

<sup>4</sup> Includes 89,354 M. cu. ft. of manufactured (coke oven) gas reported as fuel used in the mining of iron ore.

MINES AND QUARRIES—PENNSYLVANIA.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919—Continued.

	PRODUCING ENTERPRISES—continued.							NONPRODUCING ENTERPRISES.		
	Slate.	Clay.	Basalt.	Granite.	Mineral pigments.	Silica.	All other. <sup>1</sup>	Total.	Coal, bituminous.	Petroleum and natural gas.
Number of enterprises.....	42	62	29	29	13	4	12	13	10	3
Number of mines and quarries.....	42	63	32	30	13	4	12	10	10	
Number of petroleum and natural-gas wells.....										
Number of natural-gas gasoline plants.....										
Capital.....	\$2,829,629	\$4,357,640	\$3,553,049	\$475,238	\$515,762	\$147,665	\$2,243,554	\$3,244,212	\$3,191,312	\$82,400
Principal expenses:										
Salaries and wages—										
Officers.....	\$79,310	\$62,329	\$63,050	\$8,422	\$10,575	\$1,550	\$17,675	\$3,200	\$3,200	
Superintendents and managers.....	\$96,085	\$90,593	\$54,954	\$10,633	\$8,380	\$8,400	\$40,387	\$3,223	\$3,223	
Technical employees.....	\$600		\$7,500				\$16,681	\$18,512	\$17,497	\$1,015
Clerks, etc.....	\$32,589	\$44,111	\$39,466	\$4,624	\$7,267		\$11,137	\$1,445	\$1,445	
Wage earners.....	\$1,656,082	\$1,532,468	\$792,637	\$237,481	\$110,330	\$40,260	\$474,918	\$134,705	\$133,945	\$760
Supplies and materials.....	\$297,941	\$410,395	\$618,769	\$43,396	\$65,767	\$9,720	\$303,996	\$166,573	\$156,161	\$10,412
Cost of coal and natural gas purchased as material and for resale.....										
Fuel.....	\$164,461	\$66,890	\$152,792	\$20,585	\$11,511	\$5,775	\$51,324	\$1,193	\$196	\$996
Power.....	\$42,234	\$15,950	\$10,277	\$1,739	\$560	\$479	\$24,926	\$1,324	\$1,264	\$60
Royalties and rents.....	\$110,981	\$72,277	\$60,635	\$12,336	\$7,596		\$196,143	\$1,050	\$900	\$150
Taxes.....	\$33,168	\$30,271	\$61,046	\$3,774	\$1,672	\$1,371	\$42,748	\$40,224	\$40,204	\$20
Contract work.....	\$25,033	\$4,121	\$2,507	\$640	\$1,163		\$13,719	\$41,216	\$11,616	\$29,600
Expenditures for development (included in the above items).....	\$36,717	\$69,265	\$85,254	\$18,709	\$5,456	\$30,000	\$318,321	\$301,516	\$258,851	\$42,665
Value of products.....	\$2,651,633	\$2,546,485	\$2,298,791	\$435,654	\$344,739	\$54,967	\$1,373,209			
Persons engaged in industry.....	2,051	1,440	823	252	140	51	466	152	135	17
Proprietors and firm members (total).....	17	34	14	37	10	3	14	18	4	14
Number performing manual labor.....	9	4	4	5	1		3	2	2	1
Salaries officers.....	47	9	18	4	4	2	15	6	6	
Superintendents and managers.....	63	33	30	7	5		8	13	11	2
Technical employees.....	1		1				3	3	3	
Clerks, etc.....	1,992	1,397	721	197	115	48	417	110	109	1
Wage earners by occupation (Dec. 15):										
Above ground (total).....	1,724	777	710	237	106	39	392	250	249	1
Below ground (total).....	340	620			33		83	22	22	
Foremen, shift bosses, etc.—										
Above ground.....	48	28	28	12	6	2	14	6	6	
Below ground.....	16	12			3		3	2	2	
Enginemen, hoistmen, electricians, mechanics, etc.—										
Above ground.....	168	97	121	12	7	2	107	11	10	1
Below ground.....		5								
Miners, quarrymen, and driftnen, including their helpers—										
Above ground.....	321	166	212	131	11	2	47	29	29	
Below ground.....	270	481			14		37	8	8	
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—										
Above ground.....	127	210	49	18	3	18	48	55	55	
Below ground.....	33	100			10		3	4	4	
Muckers, loaders, laborers, and others not classified—										
Above ground.....	500	223	268	54	53	10	133	149	149	
Below ground.....	21	22			6		40	8	8	
Wage earners employed in mills and beneficiating plants—										
Above ground.....	560	53	32	10	26	5	38			
Number of wage earners under 16 years of age included in those reported above—										
Above ground.....	4							1	1	
Mineral and oil land operated..... acres..	1,054	20,992	4,268	480	1,211	410	990	9,047	3,722	325
Land controlled, total..... acres..	1,391	22,085	4,768	499	2,977	469	1,112	9,110	3,785	325
Mineral and oil land owned.....	629	11,129	733	402	825	410	2,280	6,947	6,946	1
Mineral and oil land leased.....	425	9,763	3,525	78	386		750	2,100	1,776	324
Timber and other lands owned and leased.....	337	1,143	500	9	1,766	89	132	63	63	
Power used: Aggregate horsepower.....	9,678	3,992	6,068	1,233	1,198	390	5,932	159	103	56
Prime movers (horsepower, total).....	7,963	2,638	5,147	853	1,183	365	5,250	108	53	55
Steam engines—										
Number.....	185	44	53	30	12	1	16			
Horsepower.....	7,385	2,857	5,000	768	585	125	1,282	85	30	55
Steam turbines—										
Number.....										
Horsepower.....										
Internal-combustion engines—										
Number.....	1	17	6	9	6	4	5	2	2	
Horsepower.....	8	281	147	84	228	240	3,663	23	23	
Water wheels and turbines—										
Number.....										
Horsepower.....					5		3			
Purchased power (horsepower, total).....	2,285	1,254	911	380	370	25	305	51	30	1
Electric motors operated by purchased current—										
Number.....	95	36	28	5	2	2	20	5	4	1
Horsepower.....	2,285	1,214	911	380	15	25	712	51	50	1
Other equipment operated by purchased power—										
Number.....										
Horsepower.....										
Electric motors run by current generated by enterprise using:										
Number.....		14					54			
Horsepower.....		201					2,781			
Fuel used:										
Coal, anthracite..... tons, 2,240 pounds..	8,504	337			863		50			
Coal, bituminous..... tons, 2,000 pounds..	24,106	14,597	30,847	3,662	1,552	682	11,071	178	40	138
Coke..... tons, 2,000 pounds..										
Wood..... cords.....		50			290		130			
Fuel oils..... barrels.....	36		303				30			
Gasoline and other volatile oils..... barrels.....	1	403	83	149	215	34	387	10	10	
Natural gas..... 1,000 cubic feet.....		7,747				1,428	* 89,354			

<sup>1</sup> Includes enterprises as follows: Abrasive materials, 1; graphite, 3; iron ore, 5; lead and zinc, 1; talc and soapstone, 2.  
<sup>2</sup> Manufactured (coke oven) gas.



## RHODE ISLAND.

Rhode Island, which ranks forty-eighth among the states in size (land area 1,067 square miles) and thirty-eighth in population (604,397 in 1920), ranked forty-fifth in value of mineral products in 1919. The state also ranked forty-fifth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total value of products of all mines and quarries in Rhode Island in 1919 was \$952,204, which was an increase of 6.1 per cent over the corresponding amount for 1909. Nevertheless, a decline in the quarrying industries in Rhode Island is indicated by Table 1. The decreases therein shown in the number of enterprises and individual quarries and mines operated and in the number of wage earners employed are more significant than the increases in cost of supplies and materials and fuel and power, and in value of products, which are largely due to general price increases. The large increase in taxes shown is accounted for by the incidence of new taxes since 1909.

The mining and quarrying industries reported for 1919, classified by principal products and listed in order of value of products, were granite, basalt or trap rock, and graphite.

Production of granite was the leading mineral industry in Rhode Island. This industry included 8 out of a total of 14 mineral enterprises reported in the state, employed 71 per cent of the total number of wage earners, and produced stone to the value of

\$733,683, or 77.1 per cent of the total value of products of all mines and quarries in the state.

Table 2 shows that among operators of quarrying and mining enterprises in Rhode Island corporations were in the majority. This form of organization conducted 57.1 per cent of the number of enterprises, employed 75.1 per cent of the total number of wage earners, and reported 81.5 per cent of the total value of products.

The relative importance of enterprises, as determined by the average number of wage earners employed, is shown in Table 3. The small enterprises, employing less than 101 wage earners each, included 13 out of a total of 14, and only 1 of the 13 employed more than 50 wage earners. The 12 smaller enterprises, each having less than 50 wage earners, together employed 51 per cent of the total number of wage earners, whereas the two larger enterprises employed 49 per cent.

The prevailing hours of labor, as shown in Table 4, were 44 to 53 per week in the majority of enterprises and for 75.6 per cent of the wage earners.

The statistics for wage earners given in Table 5, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 6 presents for 1919 statistics in detail for the state as a whole and for granite, the only industry that can be shown without disclosing individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	14	21	.....	Capital.....	\$810,066	\$567,015	42.9
Number of mines and quarries.....	15	27	.....	Principal expenses:			
Persons engaged.....	421	725	-41.9	Salaries.....	82,681	57,889	42.8
Proprietors and firm members, total.....	6	18	.....	Wages.....	399,648	409,883	-2.5
Number performing manual labor in or about the mines and quarries.....		7	.....	Contract work.....	1,000		.....
Salaried employees.....	46	42	.....	Supplies and materials.....	146,637	130,947	12.0
Wage earners (average number).....	369	665	-44.5	Fuel and power.....	55,075	26,991	104.0
Power used (horsepower).....	3,000	2,350	27.7	Royalties and rents.....	5,755	8,552	-32.7
				Taxes.....	9,279	3,343	177.6
				Value of products.....	952,204	897,006	6.1

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	14	369	\$952,204	\$68,015	100.0	100.0	100.0
Corporation.....	8	277	775,855	96,982	57.1	75.1	81.5
Individual.....	6	92	176,349	20,992	42.9	24.9	18.5
GRANITE.....	8	262	733,688	91,710	100.0	100.0	100.0
Corporation.....	4	238	687,510	171,878	50.0	90.8	98.7
Individual.....	4	24	46,178	11,543	50.0	9.2	6.3

TABLE 3.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	14	100.0	369	100.0	GRANITE.....	8	100.0	262	100.0
1 to 5.....	5	35.7	21	5.7	1 to 5.....	3	37.5	15	5.7
6 to 20.....	3	21.4	32	8.7	6 to 20.....	2	25.0	20	7.6
21 to 50.....	4	28.6	135	36.6	21 to 50.....	1	12.5	46	17.6
51 to 100.....	1	7.1	74	20.1	51 to 100.....	1	12.5	74	28.2
101 to 500.....	1	7.1	107	29.0	101 to 500.....	1	12.5	107	40.8

TABLE 4.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—					
	Enterprises.	Wage earners.	35 and under.		44 to 53.		54 to 62.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries.....	14	369	1	5	8	279	5	85
Granite.....	8	262	1	5	6	247	1	10
All other industries.....	6	107	.....	.....	2	32	4	75

TABLE 5.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	369	<b>248</b>	281	308	349	389	393	427	424	438	395	404	379	56.2
Granite.....	262	<b>192</b>	202	209	235	272	275	304	302	316	278	287	272	60.8
All other industries.....	107	<i>54</i>	79	94	114	117	118	123	122	122	117	117	107	43.9

## MINES AND QUARRIES—RHODE ISLAND.

TABLE 6.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.				PRODUCING ENTERPRISES.		
	Total.	Granite.	All other. <sup>1</sup>		Total.	Granite.	All other. <sup>1</sup>
Number of enterprises.....	14	8	6	Persons engaged in industry—Continued. Wage earners by occupation (Dec. 15)—Con. Miners, quarrymen, and drillmen, including their helpers— Above ground.....	106	114	52
Number of mines and quarries.....	15	8	7		Below ground.....	2	
Capital.....	\$810,006	\$553,806	\$256,200	Timbermen, trackmen, and men engaged in hauling, tramming, etc.— Above ground.....	11	5	6
Principal expenses:				Muckers, loaders, laborers, and others not classified— Above ground.....	100	63	37
Salaries and wages—				Wage earners employed in mills and beneficiating plants— Above ground.....	70	70	
Officers.....	\$22,435	\$18,335	\$4,100	Mineral land operated..... acres.....	570	433	137
Superintendents and managers.....	\$34,185	\$17,321	\$16,864	Land controlled, total..... acres.....	1,334	1,197	137
Technical employees.....	\$11,073	\$11,073		Mineral land owned.....	512	377	135
Clerks, etc.....	\$14,988	\$10,846	\$4,142	Mineral land leased.....	58	56	2
Wage earners.....	\$390,648	\$230,227	\$119,421	Timber and other lands owned and leased.....	764	764	
Supplies and materials.....	\$145,637	\$122,500	\$24,137	Power used: Aggregate horsepower.....	3,000	2,460	540
Fuel.....	\$45,826	\$35,909	\$14,627	Prime movers (horsepower, total).....	1,844	1,520	324
Power.....	\$9,549	\$7,293	\$2,256	Steam engines—			
Royalties and rents.....	\$5,755	\$5,645	\$110	Number.....	58	49	9
Taxes.....	\$9,279	\$7,754	\$1,525	Horsepower.....	1,840	1,520	320
Contract work.....	\$1,000		\$1,000	Internal-combustion engines—			
Expenditures for development (included in the above items).....	\$14,200	\$11,200	\$3,000	Number.....	1		1
Value of products.....	\$652,204	\$733,683	\$218,621	Horsepower.....	4		4
Persons engaged in industry.....	421	296	125	Purchased power (horsepower, total).....	1,156	940	216
Proprietors and firm members (total).....	6	4	2	Electric motors operated by purchased current—			
Salaries officers.....	5	3	2	Number.....	29	21	8
Superintendents and managers.....	20	11	9	Horsepower.....	1,156	940	216
Technical employees.....	6	6		Fuel used:			
Clerks, etc.....	15	10	5	Coal, anthracite..... tons, 2,240 pounds.....	118	18	100
Wage earners (average number).....	369	262	107	Coal, bituminous..... tons, 2,000 pounds.....	6,316	5,098	1,218
Wage earners by occupation (Dec. 15):				Wood..... cords.....	6		6
Above ground (total).....	420	307	113	Gasoline and other volatile oils..... barrels.....	157	125	62
Below ground (total).....	2		2				
Foremen, shift bosses, etc.—							
Above ground.....	20	17	3				
Engineers, hoistmen, electricians, mechanics, etc.—							
Above ground.....	53	38	15				

Includes enterprises as follows: Basalt, 4; graphite, 2.

## SOUTH CAROLINA.

South Carolina, which ranks thirty-ninth among the states in size (land area 30,495 square miles) and twenty-sixth in population (1,683,724 in 1920), ranked forty-fourth in value of mineral products in 1919. The state ranked fortieth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total value of products of all mines and quarries in South Carolina in 1919 was \$1,350,747, an increase of 7.8 per cent as compared with the amount reported at the census of 1909. This increase and the increases in capital, wages, cost of supplies and materials and fuel and power, as shown in Table 1, were largely affected by general price increases during the census interval and are therefore not a measure of progress in mining. Decline of the mining industries is indicated by decrease in the number of enterprises and individual mines and quarries operated and in the average number of wage earners employed.

The mineral industries reported in South Carolina in 1919 were the quarrying of granite and the mining of phosphate rock, clay, and barytes.

The leading industry, and the only one for which statistics can be shown without disclosure of individual operations, was the quarrying of granite.

This industry included one-half the enterprises reported, employed 34.5 per cent of the total number of wage earners, and reported products valued at \$747,976 or 55.4 per cent of the total value of products.

The mining enterprises in South Carolina in 1919 are classified according to form of operating organization in Table 2, which shows that corporations were most numerous and conducted the largest enterprises.

In Table 3 the mining enterprises are grouped by size according to number of wage earners employed. All enterprises were small, that is, employed fewer than 101 wage earners, except two which were in the phosphate-rock-mining industry.

Table 4 shows that in four-fifths of the enterprises and for nearly three-fourths of the wage earners the hours of labor were 54 to 62 per week in the mining industries. The 10-hour workday and 6-day week prevailed.

The statistics for wage earners presented in Table 5, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 6 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	20	29		Capital.....	\$3,205,232	\$1,209,390	165.0
Number of mines and quarries.....	20	32		Principal expenses:			
Persons engaged.....	1,008	1,879	-46.4	Salaries.....	139,843	82,240	70.0
Proprietors and firm members, total.....	15	13		Wages.....	680,484	626,429	8.6
Number performing manual labor in or about the mines and quar- ries.....	2	3		Contract work.....	308,371	6,680	143.4
Salaried employees.....	60	62		Supplies and materials.....	150,440	117,899	27.6
Wage earners (average number).....	933	1,814	-48.6	Fuel and power.....	7,512	10,336	-27.2
Power used (horsepower).....	4,656	7,012	-33.6	Loyalties and rents.....	17,556	10,783	62.8
				Taxes.....			
				Value of products.....	1,350,747	1,252,792	7.8

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

## MINES AND QUARRIES—SOUTH CAROLINA.

TABLE 2.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	20	933	\$1,350,747	\$67,537	100.0	100.0	100.0
Corporation.....	12	673	1,007,732	91,478	60.0	72.1	81.3
Individual.....	4	19	10,716	2,679	20.0	2.0	0.8
Firm.....	4	241	242,299	60,575	20.0	25.8	17.9
GRANITE.....	10	322	747,976	74,798	100.0	100.0	100.0
Corporation.....	5	236	586,023	117,205	50.0	73.3	78.3
Firm <sup>1</sup> .....	5	86	161,953	32,391	50.0	26.7	21.7

<sup>1</sup> Includes 3 individuals.

TABLE 3.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	20	100.0	933	100.0	GRANITE.....	10	100.0	322	100.0
1 to 5.....	4	20.0	11	1.2	1 to 5.....	4	40.0	11	3.4
6 to 20.....	5	25.0	64	6.9	6 to 20.....	2	20.0	24	7.5
21 to 50.....	4	20.0	128	13.7	21 to 50.....	1	10.0	41	12.7
51 to 100.....	5	25.0	359	38.5	51 to 100.....	3	30.0	246	76.4
101 to 500.....	2	10.0	371	39.8					

TABLE 4.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—					
	Enterprises.	Wage earners.	36 to 43.		44 to 53.		54 to 62.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries.....	20	933	1	77	3	174	16	682
Granite.....	10	322	1	77	3	174	6	71
All other industries.....	10	611					10	611

TABLE 5.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	933	793	784	913	922	896	893	974	<b>1,031</b>	1,006	968	1,010	1,006	76.0
Granite.....	322	307	301	302	311	315	<i>294</i>	320	346	343	324	351	350	83.8
All other industries.....	611	486	483	611	611	581	599	654	685	663	644	659	656	70.5

TABLE 6.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.				PRODUCING ENTERPRISES.		
	Total.	Granite.	All other. <sup>1</sup>		Total.	Granite.	All other. <sup>1</sup>
Number of enterprises.....	20	10	10	Persons engaged in industry—Continued. Wage earners by occupation (Dec. 15)—Continued.			
Number of mines and quarries.....	20	10	10		Timbermen, trackmen, and men engaged in hauling, tramming, etc.—		
Capital.....	\$3,205,232	\$994,240	\$2,210,992	Above ground.....	86		86
Principal expenses:				Muckers, loaders, laborers, and others not classified—			
Salaries and wages—				Above ground.....	305	110	285
Officers.....	\$67,949	\$58,789	\$9,160	Below ground.....	18		18
Superintendents and managers.....	\$40,926	\$12,348	\$28,578	Wage earners employed in mills and beneficiating plants—			
Technical employees.....	\$6,000	\$3,000	\$3,000	Above ground.....	89	8	81
Clerks, etc.....	\$24,968	\$13,293	\$11,675	Below ground.....			
Wage earners.....	\$680,484	\$278,162	\$402,322	Number of females included in wage earners reported above—			
Supplies and materials.....	\$308,371	\$199,372	\$108,999	Above ground.....	5		5
Fuel.....	\$122,170	\$38,742	\$83,428	Mineral land operated..... acres..	31,084	2,364	29,320
Power.....	\$28,270	\$24,687	\$3,583	Land controlled, total..... acres..	31,744	2,374	29,370
Royalties and rents.....	\$7,512	\$3,762	\$3,750	Mineral land owned.....	31,630	2,310	29,320
Taxes.....	\$17,556	\$7,278	\$10,278	Mineral land leased.....	104	54	50
Expenditures for development (included in the above items).....	\$111,698		\$111,698	Timber and other lands owned and leased.....	10	10	
Value of products.....	\$1,350,747	\$747,976	\$602,771	Power used: Aggregate horsepower.....	4,656	2,392	2,264
Persons engaged in industry.....	1,008	356	652	Prime movers (horsepower, total).....	2,572	1,057	1,515
Proprietors and firm members (total).....	15	9	6	Steam engines—			
Number performing manual labor.....	2	2		Number.....	48	21	27
Salaried officers.....	14	10	4	Horsepower.....	2,450	1,020	1,430
Superintendents and managers.....	20	6	14	Internal-combustion engines—			
Technical employees.....	2	1	1	Number.....	10	3	7
Clerks, etc.....	24	8	16	Horsepower.....	122	87	85
Wage earners (average number).....	933	322	611	Purchased power (horsepower, total).....	2,084	1,385	749
Wage earners by occupation (Dec. 15):				Electric motors operated by purchased current—			
Above ground (total).....	1,003	368	640	Number.....	36	18	18
Below ground (total).....	20		20	Horsepower.....	2,084	1,385	749
Foremen, shift bosses, etc.—				Electric motors run by current generated by enterprise using:			
Above ground.....	34	17	17	Number.....	4		4
Below ground.....	2		2	Horsepower.....	200		200
Enginemen, hoistmen, electricians, mechanics, etc.—				Fuel used:			
Above ground.....	82	34	48	Coal, bituminous..... tons, 2,000 pounds..	18,949	5,288	13,661
Below ground.....	1		1	Wood..... cords.....	3,113	432	2,681
Miners, quarrymen, and drillmen, including their helpers—				Gasoline and other volatile oils..... barrels..	86	12	74
Above ground.....	317	194	123				
Below ground.....	8		8				

<sup>1</sup> Includes enterprises as follows: Barytes, 1; clay, 7; phosphate rock, 2.

## SOUTH DAKOTA.

South Dakota, which ranks fourteenth among the states in size (land area 76,868 square miles) and thirty-seventh in population (636,547 in 1920), ranked thirty-fifth in value of mineral products for 1919. The state ranked thirty-eighth in the total number of persons engaged in the mining industries and thirty-seventh in the average number of persons employed.

The total amount received for products by operators of mines, quarries, and wells in South Dakota in 1919 was \$5,314,516, which was a decrease of 17.4 per cent as compared with the gross value of products reported at the census of 1909. This decrease and the decreases in capital, wages, cost of supplies and materials and fuel and power, shown in Table 1, were diminished by the general price increases during the census period, and are therefore not a fair measure of change in the mining industries. The decreases in number of enterprises, number of individual mines and quarries operated, and average number of wage earners employed, as shown in Table 1, indicate decline in mining in South Dakota in 1919, but are in part due to temporarily adverse industrial conditions.

The mining industries reported in South Dakota for 1919, classified according to principal products and listed in order of value of products, were gold and silver from lode mines, sandstone, granite, gypsum, coal, limestone, mica, lead, and natural gas. The leading industry in the state was the mining of gold ores, in which South Dakota ranked fifth among the

states. Statistics for this industry are not presented separately in order to avoid disclosure of individual operations.

The character of organizations conducting mining enterprises is shown in Table 2, which indicates the preponderance of corporations not only as to number of enterprises operated, but also far more as to number of wage earners employed and value of products reported.

Table 3 shows that, measured by number of wage earners employed, all mining enterprises in the state of South Dakota were small; only 2 had more than 100 wage earners each and employed more than 90 per cent of the total number of wage earners. These larger enterprises were in the gold mining industry.

Table 4 shows that for a majority of the enterprises employing wage earners and for 98.3 per cent of all the wage earners the prevailing hours of labor were 54 to 62 per week. The 8-hour day and 7-day week prevailed in the gold mines, and the 10-hour day and 6-day week in the quarries and gypsum mines.

The statistics for wage earners presented in Table 5, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 6 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	23	39	.....	Capital.....	\$28,131,922	\$32,097,991	-14.0
Number of mines and quarries.....	28	43	.....	Principal expenses:			
Number of natural-gas wells.....	1	3	.....	Salaries.....	216,810	207,137	4.7
Persons engaged.....	1,890	3,577	-47.4	Wages.....	2,497,340	3,224,675	-22.6
Proprietors and firm members, total....	15	31	.....	Contract work.....	11,941	50	.....
Number performing manual labor in or about the mines, quarries, and wells.....	11	8	.....	Supplies and materials.....	1,005,195	* 1,109,671	-9.1
Salaried employees.....	80	90	.....	Fuel and power.....	284,019	421,048	-32.5
Wage earners (average number).....	1,785	3,436	-48.4	Royalties and rents.....	6,805	4,776	42.5
Power used (horsepower).....	11,844	15,648	-24.3	Taxes.....	425,485	102,063	316.9
				Value of products.....	5,314,516	6,432,417	-17.4

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

\* Includes cost of ore purchased as material.

MINES AND QUARRIES—SOUTH DAKOTA.

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TABLE 2.—CHARACTER OF ORGANIZATION, PRODUCING ENTERPRISES: 1919.

CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
All industries.....	23	1,785	\$5,314,516	\$231,066	100.0	100.0	100.0
Corporation.....	14	1,758	5,198,671	271,334	60.9	98.5	97.8
Individual.....	5	24	105,092	21,018	21.7	1.3	2.9
Firm.....	4	3	10,753	2,688	17.4	0.2	0.3

TABLE 3.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	23	100.0	1,785	100.0	SANDSTONE.....	5	100.0	89	100.0
No wage earners.....	6	26.1			1 to 5.....	2	40.0	6	6.7
1 to 5.....	9	39.1	25	1.4	6 to 20.....	1	20.0	18	20.2
6 to 20.....	3	13.0	43	2.4	21 to 50.....	2	40.0	65	73.0
21 to 50.....	3	13.0	99	5.5	COAL, BITUMINOUS.....	5	100.0	8	100.0
51 to 100.....	1	4.4	106	5.9	No wage earners.....	2	40.0		
101 to 500.....	1	4.4	1,512	84.7	1 to 5.....	3	60.0	8	100.0
Over 1,000.....	1	4.4							

TABLE 4.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—						INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—					
	Enterprises.	Wage earners.	26 to 43.		44 to 53.		54 to 62.			Enterprises.	Wage earners.	26 to 43.		44 to 53.		54 to 62.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.				Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries....	117	1,785	1	2	6	29	10	1,754	Coal, bituminous.....	3	8	1	2	1	3	1	8
Sandstone.....	5	89			1	3	4	86	All other.....	9	1,688			4	23	5	1,008

<sup>1</sup> Exclusive of 6 enterprises employing no wage earners in industries as follows: Coal, bituminous, 2; gold and silver, lode mines, 1; limestone, 2; natural gas, 1.

TABLE 5.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	1,854	1,839	1,906	1,898	1,858	1,854	1,900	1,963	1,945	1,920	1,762	1,675	1,780	85.2
Producing enterprises.....	1,785	1,801	1,868	1,860	1,819	1,793	1,826	1,899	1,866	1,828	1,663	1,574	1,632	83.3
Sandstone.....	89	40	43	42	65	78	89	122	141	121	111	127	91	28.4
Coal, bituminous.....	8	16	11	13	8	4			2	6	10	13	15	12.5
All other industries.....	1,688	1,745	1,814	1,805	1,748	1,713	1,737	1,768	1,723	1,701	1,542	1,454	1,536	79.1
Nonproducing enterprises.....	69	38	38	38	39	61	74	73	79	92	99	99	98	38.4



## MINES AND QUARRIES—SOUTH DAKOTA.

TABLE 6.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.				Non-producing enterprises. <sup>2</sup>
		Total.	Sandstone.	Coal, bituminous.	All other. <sup>1</sup>	
Number of enterprises.....	23	23	5	5	13	5
Number of mines and quarries.....	33	28	6	5	17	5
Number of natural-gas wells.....	1	1			1	
<b>Capital.....</b>	<b>\$30,586,678</b>	<b>\$28,131,922</b>	<b>\$194,507</b>	<b>\$32,770</b>	<b>\$27,904,645</b>	<b>\$2,434,756</b>
<b>Principal expenses:</b>						
<b>Salaries and wages—</b>						
Officers.....	\$10,085	\$8,650	\$4,150		\$4,500	\$2,035
Superintendents and managers.....	\$64,766	\$62,066	\$4,500		\$57,506	\$2,700
Technical employees.....	\$34,338	\$34,338			\$34,338	
Clerks, etc.....	\$32,621	\$31,556	\$3,294		\$35,262	\$1,065
Wage earners.....	\$2,596,754	\$2,497,340	\$98,308	\$11,428	\$2,387,614	\$99,414
Supplies and materials.....	\$1,093,388	\$1,008,198	\$35,850	\$937	\$971,409	\$35,192
Fuel.....	\$248,106	\$238,703	\$3,689	\$105	\$234,009	\$9,402
Power.....	\$49,813	\$45,316	\$6,905		\$38,711	\$4,497
Royalties and rents.....	\$6,805	\$6,805	\$1,175	\$1,500	\$4,180	
Taxes.....	\$427,018	\$425,485	\$1,335	\$310	\$423,840	\$1,533
Contract work.....	\$22,069	\$11,941			\$11,941	\$10,128
Expenditures for development (included in the above items).....	\$190,572	\$41,903			\$41,903	\$148,669
Value of products.....	\$5,314,516	\$5,314,516	\$140,068	\$29,892	\$5,144,556	
<b>Persons engaged in industry.....</b>	<b>1,958</b>	<b>1,880</b>	<b>96</b>	<b>16</b>	<b>1,768</b>	<b>78</b>
Proprietors and firm members (total).....	16	15		8	7	1
Number performing manual labor.....	11	11		7	4	
Salaried officers.....	8	5	2		3	3
Superintendents and managers.....	18	15	3		12	3
Technical employees.....	23	23			23	
Clerks, etc.....	39	37	2		35	2
Wage earners (average number).....	1,854	1,785	89	8	1,688	60
<b>Wage earners by occupation (Dec. 15):</b>						
Above ground (total).....	1,149	1,065	101	7	957	84
Below ground (total).....	658	624		9	615	32
Foremen, shift bosses, etc.—						
Above ground.....	55	48	3		45	7
Below ground.....	42	35			35	7
Engineers, hoistmen, electricians, mechanics, etc.—						
Above ground.....	344	320	10	1	309	24
Below ground.....	24	24			24	
Miners, quarrymen, and drillmen, including their helpers—						
Above ground.....	119	96	16	4	76	23
Below ground.....	307	282		9	273	25
Timbermen, truckmen, and men engaged in hauling, tramping, etc.—						
Above ground.....	63	63	1	2	60	
Below ground.....	38	38			38	
Muckers, loaders, laborers, and others not classified—						
Above ground.....	326	296	67		229	30
Below ground.....	245	245			245	
Wage earners employed in mills and beneficiating plants—						
Above ground.....	242	242	4		238	
Number of females included in wage earners reported above:						
Above ground.....	2	2			2	
<b>Mineral and oil land operated.....</b> acres..	<b>13,899</b>	<b>11,538</b>	<b>128</b>	<b>880</b>	<b>10,530</b>	<b>2,331</b>
<b>Land controlled, total.....</b> acres..	<b>46,250</b>	<b>43,288</b>	<b>128</b>	<b>1,520</b>	<b>41,640</b>	<b>2,971</b>
Mineral and oil land owned.....	12,237	11,056	113	720	10,223	1,181
Mineral and oil land leased.....	1,632	482	15	160	307	1,150
Timber and other lands owned and leased.....	32,380	31,750		640	31,110	640
<b>Power used: Aggregate horsepower.....</b>	<b>12,739</b>	<b>11,844</b>	<b>497</b>	<b>49</b>	<b>11,298</b>	<b>895</b>
Prime movers (horsepower, total).....	10,484	9,934	90	49	9,695	600
Steam engines—						
Number.....	17	10	3	1	6	7
Horsepower.....	5,455	4,855	90	35	4,780	600
Steam turbines—						
Number.....	2	2			2	
Horsepower.....	4,500	4,500			4,500	
Internal-combustion engines—						
Number.....	9	9		3	6	
Horsepower.....	364	354		14	340	
Water wheels and turbines—						
Number.....	9	9			9	
Horsepower.....	125	125			125	
Purchased power (horsepower, total).....	2,305	2,010	407		1,603	295
Electric motors operated by purchased current—						
Number.....	101	91	13		78	10
Horsepower.....	2,305	2,010	407		1,603	295
Electric motors run by current generated by enterprise using:						
Number.....	311	311			311	
Horsepower.....	11,945	11,945			11,945	
<b>Fuel used:</b>						
Coal, bituminous..... tons, 2,000 pounds..	43,111	42,111	608	28	41,480	1,000
Coke..... tons, 2,000 pounds..	236	236			236	
Wood..... cords..	4,109	2,719			2,719	1,390
Fuel oils..... barrels..	2,748	2,748			2,748	
Gasoline and other volatile oils..... barrels..	327	327	1	15	311	

<sup>1</sup> Includes enterprises as follows: Gold and silver, lode mines, 4; granite, 1; gypsum, 2; lead, 1; limestone, 3; mica, 1; natural gas, 1.

<sup>2</sup> Includes enterprises as follows: Gold, silver, copper, lead, or zinc, lode mines, 4; rare metals (tin and tungsten), 1.

## TENNESSEE.

Tennessee, which ranks thirty-fourth among the states in size (land area 41,687 square miles) and nineteenth in population (2,337,885 in 1920), ranked twenty-third in the value of mineral products in 1919. The state ranked nineteenth in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total amount received for products by operators of all mines, quarries, and wells in Tennessee in 1919 was \$23,292,114, which was an increase of 83.5 per cent as compared with the gross value of products reported at the census of 1909. The value for 1919 includes receipts for mineral by-products, for power sold, and for work or miscellaneous services for other enterprises amounting to \$70,375. The statistics for 1909 include data on smelters operated in connection with mines, but similar data were excluded from the statistics for 1919.

Increases in value of products, capital, wages, cost of supplies and materials and fuel and power, as shown in Table 1, are largely due to general price increases and are, therefore, not a measure of growth in mining. A decrease in mining in Tennessee in 1919 as compared with 1909 is indicated by decrease in number of enterprises, and in the number of individual mines and quarries operated, and also by decrease in the average number of wage earners.

The mining industries reported in Tennessee, classified according to principal products and listed in order of value of products, were bituminous coal, phosphate rock, zinc (and lead), marble, iron ore, copper, limestone, barytes, clay, silica, petroleum and natural gas, mineral pigments, bauxite, manganese ore, and sandstone. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading industry in 1919 was the mining of bituminous coal. More than half of the mining enterprises in the state were engaged in this industry, and they employed 66 per cent of the total number of wage earners and reported products valued at \$14,024,432, or 60.2 per cent of the total. The coal-producing area is a northeast-southwest belt a little east of the center of the state. Production was reported from 10 northern counties which form part of the Middle Appalachian coal field, and 6 southern counties which form part of the Southern Appalachian coal field.

The industry second in importance in Tennessee was the mining of phosphate rock. The 19 enterprises reporting in this industry employed 10.8 per cent of the total number of wage earners and contributed as value of products \$3,139,671, or 13.5 per cent of the total value of products. The combined

production of five counties, in the central and south-central sections of the state, gave Tennessee second rank in the United States in this industry in 1919.

The mining of lead-bearing zinc ores ranked third. The statistics for the three enterprises in this industry have been combined with those for two copper enterprises in order to avoid disclosure of individual operations. These industries together employed 8.9 per cent of the total number of wage earners and reported 13.4 per cent of the total value of products. The operating copper mines are in the southeastern part of the state and the operating zinc mines in the northeastern part.

The marble industry was fourth in importance in the state, and Tennessee ranked second in the United States in 1919 in the value of marble products. Thirteen enterprises in this industry employed 3.7 per cent of the total number of wage earners and reported products valued at \$1,088,131, or 4.7 per cent of the total value of products.

The mining enterprises in Tennessee in 1919 are classified according to form of operating organization in Table 3, which shows that, for the state as a whole and for each of the industries presented separately, corporations outnumbered other forms of organization and conducted the most important enterprises.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Tennessee, 76.9 per cent had fewer than 101 wage earners each and employed 27.3 per cent of the total number of wage earners. On the other hand, only 44 enterprises, or 21.7 per cent of the total number, had more than 100 wage earners each, and these enterprises employed 72.8 per cent of the total number of wage earners. The largest enterprises were in the coal and copper mining industries.

Table 5 shows that in nearly one-half of the enterprises employing wage earners, and for 63.1 per cent of the wage earners reported, the hours of labor were 44 to 53 per week. In one-third of the enterprises and for about one-fourth of the wage earners the hours were 54 to 62 per week. In the coal and copper and zinc mining industries the 8-hour day and 6-day week was the rule, but a considerable number of enterprises in the coal industry reported a shorter week. In iron-ore mining, phosphate-rock mining, and in the quarrying industries the prevailing hours were 54 to 62 per week with the 10-hour day and 6-day week.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by

month, reflect conditions prevailing in the industries during the census year. The very low minimum in the coal industry in November was due to the great strike of the coal miners. The abnormal minimum in this industry accounts for the very low minimum in

the same month for the combined statistics for all industries.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	203	216	-6.0	Capital.....	\$51,456,945	\$53,529,977	82.2
Number of mines and quarries.....	253	365	-37.9	Principal expenses:			
Number of petroleum and natural-gas wells.....	14	21		Salaries.....	1,638,395	988,283	65.8
Persons engaged.....	15,450	17,278	-10.6	Wages.....	12,987,328	7,358,583	78.6
Proprietors and firm members, total.....	67	87		Contract work.....	175,798	54,372	219.6
Number performing manual labor in or about the mines, quarries, and wells.....	17	24		Supplies and materials.....	2,392,397	1,612,371	141.2
Salaried employees.....	913	853	7.0	Fuel and power.....	1,259,983	845,376	95.2
Wage earners (average number).....	14,470	16,338	-11.4	Royalties and rents.....	554,748	617,097	-10.1
Power used (horsepower).....	56,685	34,523	64.2	Taxes.....	608,917	94,575	543.8
				Value of products.....	23,292,114	12,692,547	83.5

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

<sup>2</sup> Includes cost of ore and coal purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	203	14,470	100.0	\$23,292,114	100.0	Iron ore.....	12	394	5.7	\$820,118	3.6
Coal, bituminous.....	197	9,556	66.0	14,094,422	60.2	Limestone.....	21	349	2.4	534,848	2.3
Phosphate rock.....	19	1,568	10.8	3,189,671	13.5	Barytes.....	5	108	0.7	237,619	1.0
Copper and lead and zinc.....	5	1,282	8.9	3,121,803	13.4	Clay.....	10	177	1.2	182,705	0.8
Marble.....	13	540	3.7	1,068,131	4.7	All other industries <sup>1</sup> .....	11	66	0.5	131,796	0.6

<sup>1</sup> Includes enterprises in industries as follows: Bauxite, 1; manganese ore 3; mineral pigments, 2; petroleum and natural gas, 1; sandstone, 2; silica, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	203	14,470	\$23,292,114	\$114,739	100.0	100.0	100.0
Corporation.....	158	14,015	22,699,988	143,608	77.8	96.9	97.4
Individual.....	27	286	365,024	13,520	13.3	2.0	1.6
Firm <sup>1</sup> .....	18	169	287,092	13,172	8.9	1.2	1.0
COAL, BITUMINOUS.....	107	9,556	14,094,422	131,009	100.0	100.0	100.0
Corporation.....	85	9,330	12,732,409	161,570	79.4	97.6	97.9
Individual.....	10	81	96,097	9,510	9.3	0.8	0.7
Firm <sup>1</sup> .....	12	145	194,926	16,244	11.2	1.5	1.4
PHOSPHATE ROCK.....	19	1,568	3,189,671	165,246	100.0	100.0	100.0
Corporation.....	15	1,524	3,054,688	203,646	78.9	97.2	97.3
Individual <sup>2</sup> .....	4	44	84,983	21,246	21.1	2.8	2.7
MARBLE.....	13	540	1,068,131	83,702	100.0	100.0	100.0
Corporation.....	13	540	1,068,131	83,702	100.0	100.0	100.0
LIMESTONE.....	21	349	534,848	25,469	100.0	100.0	100.0
Corporation.....	14	288	430,149	31,368	66.7	81.1	82.1
Individual.....	4	47	66,824	16,706	19.0	13.5	13.5
Firm.....	3	19	28,875	9,636	14.3	8.4	8.4
CLAY.....	10	177	182,705	18,271	100.0	100.0	100.0
Corporation.....	6	172	174,619	29,103	60.0	97.2	95.6
Individual <sup>2</sup> .....	4	5	8,086	3,022	40.0	2.8	4.4

<sup>1</sup> Includes 2 other forms of organization.

<sup>2</sup> Includes 1 firm.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	203	100.0	14,470	100.0	<b>IRON ORE</b> .....	12	100.0	824	100.0
No wage earners.....	3	1.5	.....	.....	1 to 5.....	1	8.3	2	0.2
1 to 5.....	30	14.8	71	0.5	6 to 20.....	2	16.7	38	4.6
6 to 20.....	56	27.6	717	5.0	21 to 50.....	3	25.0	112	13.6
21 to 50.....	47	23.2	1,515	10.5	51 to 100.....	4	33.3	244	29.6
51 to 100.....	22	11.3	1,630	11.3	101 to 500.....	2	16.7	428	51.9
101 to 500.....	41	20.2	8,657	59.8	<b>MARBLE</b> .....	13	100.0	540	100.0
501 to 1,000.....	3	1.5	1,879	13.0	6 to 20.....	5	38.5	66	12.2
<b>COAL, BITUMINOUS</b> .....	107	100.0	9,556	100.0	21 to 50.....	5	38.5	179	32.1
1 to 5.....	12	11.2	33	0.3	51 to 100.....	2	15.4	147	27.2
6 to 20.....	28	26.2	350	3.7	101 to 500.....	1	7.7	188	34.4
21 to 50.....	22	20.6	778	8.1	<b>LIMESTONE</b> .....	21	100.0	349	100.0
51 to 100.....	14	13.1	938	9.8	1 to 5.....	3	14.3	2	0.6
101 to 500.....	29	27.1	6,185	64.5	6 to 20.....	11	52.4	163	46.7
501 to 1,000.....	2	1.9	1,237	12.9	21 to 50.....	7	33.3	194	53.7
<b>PHOSPHATE ROCK</b> .....	19	100.0	1,568	100.0	<b>CLAY</b> .....	10	100.0	177	100.0
No wage earners.....	1	5.3	.....	.....	No wage earners.....	2	20.0	.....	.....
1 to 5.....	2	10.5	.....	.....	1 to 5.....	4	40.0	6	3.4
6 to 20.....	4	21.1	44	2.8	6 to 20.....	2	20.0	14	7.9
21 to 50.....	4	21.1	113	7.2	21 to 50.....	1	10.0	20	11.9
51 to 100.....	3	15.8	348	22.2	101 to 500.....	1	10.0	127	71.8
101 to 500.....	5	26.3	1,156	73.7	<b>BARYTES</b> .....	5	100.0	168	100.0
<b>COPPER AND LEAD AND ZINC</b> .....	5	100.0	1,282	100.0	6 to 20.....	1	20.0	17	15.7
6 to 20.....	1	20.0	7	0.5	21 to 50.....	4	80.0	91	84.3
101 to 500.....	3	60.0	632	49.4					
501 to 1,000.....	1	20.0	642	50.1					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
<b>All industries</b> .....	1,200	14,470	13	470	26	1,117	93	9,182	67	3,708	1	33
Coal, bituminous.....	107	9,556	8	455	22	1,077	75	7,701	2	233	.....	.....
Phosphate rock.....	18	1,568	1	5	1	30	1	25	15	1,038	.....	.....
Copper and lead and zinc.....	5	1,282	.....	.....	.....	.....	.....	1,107	.....	175	.....	.....
Iron ore.....	12	824	.....	.....	.....	.....	1	19	11	805	.....	.....
Marble.....	13	540	.....	.....	.....	.....	.....	13	18	540	.....	.....
Limestone.....	21	349	1	8	1	8	7	124	11	170	1	33
Clay.....	8	177	3	11	1	1	1	30	3	135	.....	.....
Barytes.....	5	108	.....	.....	.....	.....	1	25	4	38	.....	.....
All other industries.....	11	66	.....	.....	1	1	4	11	6	54	.....	.....

<sup>1</sup> Exclusive of 3 enterprises employing no wage earners in the following industries: Clay, 2; phosphate rock, 1.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries</b> .....	14,470	15,364	14,322	14,114	13,677	14,572	14,731	14,974	15,304	15,227	15,777	<b>16,406</b>	15,172	66.0
Coal, bituminous.....	9,556	10,632	9,556	9,124	8,790	9,710	9,984	10,126	10,223	10,199	<b>12,768</b>	5,357	10,232	48.8
Phosphate rock.....	1,568	<i>1,301</i>	1,435	1,455	1,577	1,649	1,624	1,657	1,733	1,695	1,577	1,635	1,419	75.1
Copper and lead and zinc.....	1,282	1,433	1,532	1,420	1,272	1,234	1,261	1,139	1,134	1,182	1,206	1,370	1,311	80.0
Iron ore.....	824	1,007	953	980	790	644	604	639	763	822	895	849	922	80.0
Marble.....	540	407	469	502	520	553	568	596	563	564	581	545	558	73.3
Limestone.....	349	311	319	380	347	356	334	354	378	376	372	301	360	79.2
Clay.....	177	107	103	128	171	173	193	211	221	230	203	199	200	45.4
Barytes.....	108	53	33	59	124	132	122	145	146	189	124	114	105	22.6
All other industries.....	66	68	66	84	80	71	61	67	93	70	66	37	34	36.6

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES <sup>1</sup>									
	Total	Coal, bituminous.	Phosphate rock.	Copper and lead and zinc.	Marble.	Iron ore.	Limestone.	Barytes.	Clay.	All other. <sup>1</sup>
Number of enterprises.....	203	107	19	5	13	12	21	5	10	11
Number of mines and quarries.....	283	143	23	6	17	24	21	7	10	10
Number of petroleum and natural-gas wells.....	14									14
Capital.....	\$51,466,345	\$20,961,471	\$14,657,494	\$8,016,676	\$1,601,336	\$3,789,115	\$350,106	\$533,067	\$234,373	\$1,330,650
Principal expenses:										
Salaries and wages—										
Officers.....	\$515,630	\$362,419	\$31,918	\$12,135	\$38,670	\$14,902	\$33,982	\$1,729	\$16,800	\$3,075
Superintendents and managers.....	\$615,091	\$367,238	\$73,744	\$72,896	\$38,895	\$23,049	\$14,334	\$15,420	\$9,140	\$6,375
Technical employees.....	\$128,063	\$72,897	\$14,449	\$29,737		\$5,962	\$663	\$5,300		\$875
Clerks, etc.....	\$379,591	\$220,262	\$54,692	\$55,207	\$16,832	\$12,900	\$3,823	\$1,500	\$4,800	\$575
Wage earners.....	\$12,987,338	\$8,609,951	\$1,174,759	\$1,646,278	\$407,912	\$583,033	\$243,393	\$95,275	\$74,028	\$62,709
Supplies and materials.....	\$3,892,397	\$2,009,072	\$634,538	\$621,239	\$249,623	\$169,791	\$65,398	\$44,406	\$23,455	\$40,590
Fuel.....	\$1,037,175	\$363,996	\$379,182	\$91,077	\$81,834	\$61,786	\$29,653	\$19,952	\$5,892	\$3,798
Power.....	\$222,808	\$50,655	\$1,750	\$153,477	\$6,244	\$120	\$7,354	\$3,202		
Royalties and rents.....	\$554,743	\$294,375	\$70,553	\$54,124	\$5,201	\$16,084	\$9,735	\$3,600	\$265	\$10,776
Taxes.....	\$608,917	\$468,768	\$63,423	\$47,936	\$15,655	\$6,199	\$3,430	\$766	\$1,540	\$3,200
Contract work.....	\$173,796	\$72,922	\$36,421	\$48,260			\$1,382		\$11,011	\$4,500
Expenditures for development (included in the above items).....	\$537,964	\$146,992	\$32,066	\$206,075	\$2,500	\$102,871	\$3,000		\$1,500	\$42,858
Value of products.....	\$23,292,114	\$14,024,432	\$3,139,671	\$3,121,803	\$1,088,131	\$529,118	\$634,948	\$239,610	\$182,705	\$131,796
Persons engaged in industry.....	15,450	10,170	1,674	1,373	590	859	335	125	197	77
Proprietors and firm members (total).....	67	36	5	1		2	12	2	5	4
Number performing manual labor.....	17	9					5		2	1
Salaries officers.....	170	106	16	3	19	2	13	2	5	2
Superintendents and managers.....	306	191	31	27	18	13	8	8	7	3
Technical employees.....	75	42	7	18		2	1	4		1
Clerks, etc.....	262	237	47	42	13	16	2	1	3	1
Wage earners (average number).....	14,470	9,586	1,568	1,282	540	824	349	108	177	66
Wage earners by occupation (Dec. 15):										
Above ground (total).....	6,682	2,744	1,456	351	590	680	414	120	210	118
Below ground (total).....	9,282	7,969	115	963		315				
Foremen, shift bosses, etc.—										
Above ground.....	249	101	48	8	19	25	21	8	12	7
Below ground.....	195	145	2	47		1				
Enginemen, hoist men, electricians, mechanics, etc.—										
Above ground.....	973	539	189	108	22	80	15	11	14	4
Below ground.....	471	392		71		8				
Miners, quarrymen, and drill men, including their helpers—										
Above ground.....	1,207	374	294	15	199	121	179	22	9	24
Below ground.....	5,562	5,030	90	241		201				
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—										
Above ground.....	872	540	162	34	12	69	49	4	2	
Below ground.....	2,099	1,638	7	415		39				
Muckers, loaders, laborers, and others not classified—										
Above ground.....	2,798	1,167	639	55	157	322	141	67	173	77
Below ground.....	1,055	784	16	189		66				
Wage earners employed in mills and beneficiating plants—										
Above ground.....	568	32	124	131	210	63	9	8		6
Number of wage earners under 16 years of age included in those reported above—										
Above ground.....	3	1	1					1		
Mineral and oil land operated..... acres.....	361,660	293,364	23,452	14,519	1,244	4,494	594	2,060	742	21,201
Land controlled, total..... acres.....	475,006	365,117	25,738	46,417	1,312	11,544	594	2,070	998	21,246
Mineral land owned.....	206,832	165,967	22,073	14,249	997	1,386	462	300	549	749
Mineral and oil land leased.....	156,856	129,317	1,379	270	255	3,108	132	1,760	193	20,452
Timber and other lands owned and leased.....	112,318	70,773	2,286	31,898	60	7,050		20	226	45
Power used: Aggregate horsepower.....	56,685	22,946	7,168	15,957	3,885	3,659	1,996	474	106	464
Prime movers (horsepower, total).....	39,297	20,745	7,070	2,540	3,136	3,619	1,231	359	106	464
Steam engines—										
Number.....	327	146	55	8	32	47	22	4	4	9
Horsepower.....	36,226	19,098	7,020	1,637	3,115	3,645	1,150	165	88	412
Steam turbines—										
Number.....	4	2		1			1			
Horsepower.....	2,008	928		1,000			80			
Internal-combustion engines—										
Number.....	69	49	1	1	1	1	1	8	3	4
Horsepower.....	1,046	722	50	3	3	3	1	194	15	52
Water wheels and turbines—										
Number.....	1									
Horsepower.....	17				17					
Purchased power (horsepower, total).....	17,388	2,203	98	13,447	750	10	765	115		
Electric motors operated by purchased current—										
Number.....	324	73	5	215	15		11	5		
Horsepower.....	17,378	2,203	98	13,447	750		765	115		
Other equipment operated by purchased power—										
Horsepower.....	10					10				
Electric motors run by current generated by enterprise using:										
Number.....	342	263	63	9	7					
Horsepower.....	12,562	10,620	1,792	50	200					
Fuel used:										
Coal, bituminous..... tons, 2,000 pounds.....	298,649	141,222	88,029	17,209	20,704	19,523	8,854	1,450	1,430	723
Coke..... tons, 2,000 pounds.....	29			29						
Wood..... cords.....	5,831	104	5,679			20	28			
Fuel oils..... barrels.....	1,240	187	245	800				4	4	1
Gasoline and other volatile oils..... barrels.....	1,017	353	42	8	1	2	206	392	12	1
Natural gas..... 1,000 cubic feet.....	1,350									1,350

<sup>1</sup> Includes enterprises as follows: Bauxite, 1; manganese ore, 3; mineral pigments, 2; petroleum and natural gas, 1; sandstone, 2; silica, 3.

## TEXAS.

Texas, which ranks first among the states in size (land area 262,398 square miles) and fifth in population (4,663,228 in 1920), ranked sixth in value of mineral products for 1919. The state ranked tenth in the total number of persons engaged in the mining industries and eleventh in the average number of wage earners employed.

The gross amount received for products by operators of all mines, quarries, and wells in Texas in 1919 was \$160,378,058, an increase of 1,393 per cent over the corresponding amount reported at the census of 1909. After eliminating duplication of \$360,637, the value of natural gas sold by some producers and included in the products reported by other producers who used it as material or resold it, the net value for 1919 was \$160,017,421, which was an increase of approximately 1,400 per cent over the corresponding value for 1919. The value of the products for 1919 includes \$310,340 received by operators of mines, quarries, and wells for power sold and work or miscellaneous services for other enterprises.

The increases in value of products, and in capital, wages, cost of supplies and materials and fuel and power, as shown in Table 1, while in large part due to general price increases in recent years, nevertheless show the growth of mineral industries in Texas. The increases in number of enterprises, number of productive wells, and average number of wage earners employed also show progress during the decade.

The mining industries reported for 1919, classified according to principal products and listed in order of value of products, were petroleum and natural gas, sulphur, bituminous coal, gypsum, gold and silver (lode), quicksilver, limestone, fuller's earth, granite, asphalt, clay, basalt, iron ore, marble, and graphite. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mining industry in Texas in 1919 was the production of petroleum and natural gas. The statistics here presented include data on operation of plants engaged in extraction of gasoline from natural gas, whether such plants were connected with well operations or not. Approximately 90 per cent of all enterprises in the state were engaged in the petroleum and natural-gas industry, and they employed 74.9 per cent of the total number of wage earners and reported as value of products \$143,337,362, or 89.4 per cent of the total value of products. The petroleum and natural-gas fields in Texas are the most extensive of any state in the Union; those in the northern and central counties, 30 of which reported production, are part of the Mid-Continent Oil Field which extends into Oklahoma and northern Louisiana; and those of the southeastern

counties, 10 of which reported production in 1919, are part of the Gulf Coast Field which extends into southern Louisiana. On the basis of value of production Texas ranked second in the United States in the petroleum and natural-gas industry.

The mining industry second in importance in Texas in 1919 was the production of sulphur in Brazoria and Matagorda Counties. Texas ranked first in the United States in this mining industry, statistics for which are not presented in order to avoid disclosure of individual operations.

The industry third in importance was the mining of coal, 4 counties in central northern Texas and 2 in southern Texas reporting production of subbituminous coal, and 12 counties in eastern and central Texas reporting production of lignite.

Other industries of minor importance in the state, but in which Texas ranked high among the producing states, were quicksilver and fuller's earth, in each of which Texas ranked second; and asphalt, in which it ranked third.

In addition to operations on producing mineral properties, work was reported by 64 enterprises in the petroleum and natural-gas industry engaged in developing nonproductive properties. These, with a combined capital of \$17,105,680, employed 179 wage earners and expended for development work \$2,871,256; the figures for wage earners and cost of development work represented 1 per cent of the aggregate number of wage earners employed and 2 per cent of the aggregate principal expenditures for all mining operations in the state. Development work was also reported by 1 nonproducing coal enterprise, for which statistics are not included in order to avoid disclosure of individual operations.

The character of organizations conducting mining enterprises in Texas in 1919 is shown in Table 3, which brings out the extent of corporate control. Although corporations conducted only 53.2 per cent of the total number of enterprises, they employed 89.4 per cent of the total number of wage earners and reported 85.4 per cent of the total value of products.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Texas, 94.8 per cent had no wage earners or fewer than 101 each, and the wage earners employed were only 32 per cent of the total number. On the other hand, 5.1 per cent of the total number of enterprises had more than 100 wage earners each and these enterprises employed 68 per cent of the total number of wage earners. The largest enterprises in the petroleum and natural-gas industry, those reporting over 500 wage earners each, made

combined reports for operations in several localities; the actual individual operations in this industry were smaller, therefore, than indicated by the table. The largest single operations were in the coal and sulphur-mining industries.

Table 5 shows that in a majority of the enterprises employing wage earners and for 61.8 per cent of the total number of wage earners the hours of labor were 63 or more per week. These hours prevailed in the petroleum and natural-gas industry and were reported by only one enterprise in another industry. In the coal-mining industry the hours of labor were generally 44 to 53 per week, with the 8-hour day and 6-day

week prevailing; in other mining and quarrying industries the hours were most commonly 54 to 62 per week, with a 9-hour or 10-hour day and 6-day week prevailing.

The statistics for wage earners presented in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the industries during the census year. The minimum number in the coal industry in November was abnormal and due to the great strike.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	624	226	164.4	Capital.....	\$361,684,392	\$19,575,969	1,747.6
Number of mines and quarries.....	81	92	87.0	Principal expenses:			
Number of petroleum and natural-gas wells.....	8,749	2,279	283.9	Salaries.....	6,429,958	541,782	1,086.9
Number of natural-gas gasoline plants.....	23			Wages.....	29,587,697	3,997,496	639.4
Persons engaged.....	22,890	7,065	224.0	Contract work.....	25,773,700	182,098	16,848.7
Proprietors and firm members, total.....	484	261	85.4	Supplies and materials <sup>2</sup> .....	45,401,592	1,833,415	2,378.3
Number performing manual labor in or about the mines, quarries, and wells.....	52	65	78.5	Fuel and power.....	6,189,559	255,614	2,321.4
Salaried employees.....	4,242	425	898.1	Royalties and rents.....	23,912,179	917,799	2,598.4
Wage earners (average number).....	18,164	6,379	184.7	Taxes.....	4,045,981	62,333	6,390.9
Power used (horsepower).....	129,063	32,003	303.3	Value of products.....	160,378,058	10,742,150	1,393.0

<sup>1</sup> Percentages are omitted where base is less than 100.

<sup>2</sup> Includes cost of natural gas purchased for use as material and for resale.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	624	18,164	100.0	\$160,378,058	100.0	Coal, bituminous.....	33	2,711	14.9	\$4,322,100	2.7
Petroleum and natural gas.....	553	13,599	74.9	143,337,362	89.4	All other industries <sup>1</sup> .....	38	1,854	10.2	12,715,956	7.9

<sup>1</sup> Includes enterprises in industries as follows: Asphalt, 1; basalt, 1; clay, 2; fuller's earth, 1; gold and silver, lode mines, 1; granite, 8; graphite, 1; gypsum, 3; from ore, 1; limestone, 12; marble, 1; quicksilver, 4; sulphur, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	624	18,164	\$160,378,058	\$257,016	100.0	100.0	100.0
Corporation.....	332	16,239	136,890,174	412,320	53.2	89.4	85.4
Individual.....	54	404	2,299,434	42,397	8.7	2.2	1.4
Firm.....	105	994	11,795,704	112,340	16.8	5.5	7.4
Other.....	133	527	9,402,746	70,697	21.3	2.9	5.9
PETROLEUM AND NATURAL GAS.....	553	13,599	143,337,362	259,200	100.0	100.0	100.0
Corporation.....	284	12,055	120,465,905	424,176	51.4	88.6	84.0
Individual.....	37	160	1,883,584	50,908	6.7	1.2	1.3
Firm.....	100	866	11,586,622	115,866	18.1	6.4	8.1
Other.....	132	518	9,401,251	71,222	23.9	3.8	6.6
COAL, BITUMINOUS.....	33	2,711	4,322,100	130,973	100.0	100.0	100.0
Corporation.....	29	2,615	4,205,450	145,016	87.9	96.5	97.3
Unincorporated <sup>1</sup> .....	4	96	116,650	29,163	12.1	3.5	2.7

<sup>1</sup> Includes 1 firm, 2 individuals, and 1 other form of organization.

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TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	<b>634</b>	<b>100.0</b>	<b>18,164</b>	<b>100.0</b>	<b>COAL, BITUMINOUS</b> .....	<b>33</b>	<b>100.0</b>	<b>2,711</b>	<b>100.0</b>
No wage earners .....	70	11.2	.....	.....	1 to 5 .....	2	6.1	10	0.4
1 to 5 .....	306	49.0	628	3.4	6 to 20 .....	9	27.3	114	4.2
6 to 20 .....	138	22.1	1,471	8.1	21 to 50 .....	8	24.2	274	10.1
21 to 50 .....	50	8.0	1,691	8.8	51 to 100 .....	7	21.2	497	18.3
51 to 100 .....	28	4.5	2,129	11.7	101 to 500 .....	6	18.2	972	35.9
101 to 500 .....	25	4.0	6,116	33.7	501 to 1,000 .....	1	3.0	844	31.1
501 to 1,000 .....	5	0.8	3,752	20.1					
Over 1,000 .....	2	0.3	2,577	14.2					
<b>PETROLEUM AND NATURAL GAS</b> .....	<b>553</b>	<b>100.0</b>	<b>13,599</b>	<b>100.0</b>					
No wage earners .....	70	12.7	.....	.....					
1 to 5 .....	294	53.2	588	4.3					
6 to 20 .....	120	21.7	1,256	9.2					
21 to 50 .....	30	5.4	933	6.9					
51 to 100 .....	17	3.1	1,308	9.6					
101 to 500 .....	17	3.1	4,744	34.9					
501 to 1,000 .....	3	0.5	2,193	16.1					
Over 1,000 .....	2	0.4	2,577	18.9					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
<b>All industries</b> .....	<b>1,584</b>	<b>18,164</b>	14	82	12	521	68	2,447	134	3,881	157	6,538	169	4,695
Petroleum and natural gas .....	483	13,599	13	26	5	6	37	276	103	2,006	156	6,500	169	4,695
Coal, bituminous .....	33	2,711	1	56	7	515	20	1,959	5	181	.....	.....	.....	.....
All other industries .....	38	1,854	.....	.....	.....	.....	11	212	26	1,604	1	38	.....	.....

<sup>1</sup> Exclusive of 70 enterprises in the petroleum and natural-gas industry employing no wage earners.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries</b> .....	<b>18,343</b>	<b>14,746</b>	15,004	16,048	16,810	17,404	17,442	18,638	20,633	21,209	21,102	19,740	<b>21,250</b>	69.4
Producing enterprises .....	18,164	<b>14,691</b>	15,003	15,942	16,688	17,263	17,269	18,459	20,420	<b>20,975</b>	20,858	19,474	20,971	69.9
Petroleum and natural gas .....	13,599	<b>8,880</b>	10,325	11,105	11,821	12,386	12,554	13,757	15,767	16,351	16,429	16,240	16,483	59.9
Coal, bituminous .....	2,711	<b>8,138</b>	3,075	2,983	2,944	2,919	2,817	2,790	2,740	<b>2,692</b>	2,529	1,568	2,553	43.1
All other industries .....	1,854	<b>1,643</b>	1,603	1,764	1,923	1,988	1,888	1,912	1,913	1,932	1,895	1,882	1,935	81.9
Nonproducing enterprises—Petroleum and natural gas .....	179	<b>85</b>	91	106	122	141	183	179	213	234	249	266	<b>279</b>	30.5



TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.				NONPRODUCING ENTERPRISES. <sup>1</sup>
		Total.	Petroleum and natural gas. <sup>2</sup>	Coal, bituminous.	All other. <sup>3</sup>	Petroleum and natural gas.
Number of enterprises.....	688	624	553	33	38	64
Number of mines and quarries.....	81	81		42	39	
Number of petroleum and natural-gas wells.....	8,749	8,749	8,749			
Number of natural-gas gasoline plants.....	23	23	23			
Capital.....	\$378,790,072	\$361,684,392	\$334,206,796	\$8,682,267	\$18,795,829	\$17,105,680
Principal expenses:						
Salaries and wages—						
Officers.....	\$1,809,095	\$1,235,445	\$915,850	\$107,349	\$212,237	\$74,250
Superintendents and managers.....	\$2,558,017	\$2,484,075	\$2,166,642	\$100,040	\$217,393	\$78,942
Technical employees.....	\$559,118	\$549,040	\$449,161	\$10,000	\$89,879	\$10,078
Clerks, etc.....	\$2,232,528	\$2,161,398	\$1,922,928	\$53,143	\$185,327	\$71,130
Wage earners.....	\$29,923,629	\$29,557,997	\$24,569,129	\$2,849,526	\$2,139,342	\$365,682
Supplies and materials.....	\$46,660,698	\$45,040,955	\$42,780,088	\$387,935	\$1,872,932	\$1,519,743
Cost of natural gas purchased as material and for resale.....	\$360,637	\$360,637	\$360,637			
Fuel.....	\$6,222,720	\$6,093,106	\$4,372,195	\$83,496	\$1,637,415	\$129,614
Power.....	\$96,453	\$96,453	\$55,655	\$597	\$40,201	
Royalties and rents.....	\$24,016,403	\$23,912,179	\$23,750,848	\$84,505	\$76,826	\$104,224
Taxes.....	\$4,050,274	\$4,045,981	\$3,611,261	\$74,065	\$360,655	\$4,293
Contract.....	\$26,612,163	\$25,773,700	\$25,766,157	\$4,543	\$3,000	\$388,463
Expenditures for development (included in the above items).....	\$74,574,988	\$71,706,732	\$71,259,170	\$107,065	\$337,497	\$2,871,256
Value of products.....	\$160,378,058	\$160,378,063	\$143,337,362	\$4,322,100	\$13,718,596	
Persons engaged in industry.....	23,222	22,890	17,904	2,862	2,124	332
Proprietors and firm members (total).....	494	494	458	4	27	10
Number performing manual labor.....	58	52	47	2	3	6
Salaried officers.....	352	329	262	44	23	23
Superintendents and managers.....	1,010	971	852	53	66	39
Technical employees.....	233	226	183	9	34	7
Clerks, etc.....	2,790	2,716	2,555	41	120	74
Wage earners (average number).....	18,343	18,164	13,569	2,711	1,854	179
Wage earners by occupation (Dec. 15):						
Above ground (total).....	19,025	18,715	16,538	394	1,733	310
Below ground (total).....	2,732	2,732		2,455	277	
Foremen, shift bosses, etc.—						
Above ground.....	131	131		43	88	
Below ground.....	65	65		56	9	
Enginemen, hoistmen, electricians, mechanics, etc.—						
Above ground.....	10,035	9,880	9,357	113	369	196
Below ground.....	86	86		85	1	
Miners, quarrymen, and drill men, including their helpers—						
Above ground.....	232	232		32	200	
Below ground.....	1,863	1,863		1,753	30	
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—						
Above ground.....	148	148		60	88	
Below ground.....	509	509		448	61	
Muckers, loaders, laborers, and others not classified—						
Above ground.....	8,280	8,166	7,231	146	789	114
Below ground.....	209	209		83	126	
Wage earners employed in mills and beneficiating plants—						
Above ground.....	199	199			199	
Number of females included in wage earners reported above—						
Above ground.....	35	35	35			
Number of wage earners under 16 years of age included in those reported above—						
Above ground.....	10	10		8	2	
Mineral and oil land operated..... acres.....	1,550,899	1,397,678	1,259,710	50,124	57,844	153,221
Land controlled, total..... acres.....	1,639,481	1,436,280	1,289,710	135,288	61,262	153,221
Mineral and oil land owned.....	108,413	107,867	85,245	32,433	40,189	546
Mineral and oil land leased.....	1,442,516	1,289,841	1,254,465	17,721	17,655	152,675
Timber and other lands owned and leased.....	88,552	88,552		85,134	3,418	
Power used: Aggregate horsepower.....	131,247	129,063	107,549	6,137	15,377	2,184
Prime movers (horsepower, total).....	128,063	125,909	106,174	6,042	13,663	2,184
Steam engines—						
Number.....	2,494	2,454	2,174	76	304	40
Horsepower.....	74,655	72,967	58,968	5,190	8,789	1,688
Steam turbines—						
Number.....	6	6		1	5	
Horsepower.....	2,700	2,700		100	2,600	
Internal-combustion engines—						
Number.....	1,854	1,829	1,734	11	84	25
Horsepower.....	50,736	50,240	47,188	752	2,302	496
Water wheels and turbines—						
Number.....	1	1			1	
Horsepower.....	2	2			2	
Purchased power (horsepower, total).....	3,154	3,154	1,375	95	1,684	
Electric motors operated by purchased current—						
Number.....	129	129	64	3	62	
Horsepower.....	3,154	3,154	1,375	95	1,684	
Electric motors run by current generated by enterprise using:						
Number.....	164	163	95	25	43	1
Horsepower.....	4,625	4,623	2,442	783	1,398	2
Fuel used:						
Coal, bituminous..... tons, 2,000 pounds.....	68,057	66,743	8,069	53,867	4,787	1,314
Coke..... tons, 2,000 pounds.....	5,170	5,170			5,170	
Wood..... cords.....	2,176	2,176			2,176	
Fuel oils..... barrels.....	2,809,651	2,739,880	2,332,649	890	406,331	169,791
Gasoline and other volatile oils..... barrels.....	14,187	13,287	9,527	155	3,605	900
Natural gas..... 1,000 cubic feet.....	10,774,715	10,390,846	10,285,933	110,913		377,869

<sup>1</sup> Not including a small operation inseparably combined with report on Oklahoma operations.

<sup>2</sup> Includes enterprises as follows: Asphalt, 1; basalt, 1; clay, 2; fuller's earth, 1; gold and silver, lode mines, 1; granite, 8; graphite, 1; gypsum, 3; iron ore, 1; limestone, 12; marble, 1; quicksilver, 4; sulphur, 2.

<sup>3</sup> Exclusive of 1 coal-mining enterprise to avoid disclosure of individual operations.

## UTAH.

Utah, which ranks tenth among the states in size (land area 82,184 square miles) and fortieth in population (449,396 in 1920), ranked eighteenth in value of mineral products in 1919. The state ranked twenty-first in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross amount received for products by operators of all mines and quarries in Utah in 1919 was \$41,510,802, an increase of 88 per cent as compared with the corresponding amount, \$22,083,282, reported at the census of 1909. After eliminating duplication for 1919 of \$297,961, the value of gold and silver ores marketed by some producers and again reported after further treatment and resale by others, and, for 1909 a similar duplication in the value of lead and zinc ores of \$106,910, the net value of products for 1919 is \$41,212,841 and for 1909, \$21,976,372. The figures for value of products for 1919 include receipts for mineral by-products, custom milling, power sold, and for work or miscellaneous services for other enterprises, which amounted to \$74,905.

The increases in value of products and in salaries, wages, cost of supplies and materials and fuel and power, as shown in Table 1, should not be used as a measure of the growth or progress of mining in Utah during the census period 1909 to 1919, for the reason that they are largely due to general price increases in recent years. Nor, on the other hand, are the decreases in number of enterprises and number of individual mines and quarries operated an indication of decline in mining, as these decreases are due, at least in part, to the temporarily adverse industrial conditions in 1919. The fact that, in the face of these conditions, there was only a slight falling off in the number of wage earners employed is a better indication of the sustained volume of operations in the industry in 1919. The large increase in taxes is due to the impost of Federal income taxes since 1909.

The mining industries reported for 1919, classified by principal products and listed in order of value of products, were copper, bituminous coal, gold and silver (lode), lead and zinc, asphalt, limestone, iron ore, gypsum, ores of rare metals (uranium and vanadium), clay, sandstone, phosphate rock, fluorspar, mineral pigments, and slate. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mining activities in Utah in 1919 were the mining and milling of gold, silver, copper, lead, and zinc ores. Sixty-one per cent of all mining enterprises were engaged in metalliferous lode mining, and these enterprises employed 59.7 per cent of the total number of wage earners and reported a product valued

at \$27,824,207, which was 67 per cent of the total value of mineral products of the state. The value of the products as here given is not the value of the metals produced or recoverable; it is the sales value of the mine and mill products—ores, concentrates, bullion, and mine-water precipitates—or the estimated equivalent of sales value when these were not sold by the producers but were smelted and refined by them. The statistics on smelting and refining operations and the value of the recovered metals, the final products, will be found in the reports of the census of manufactures. On the basis of combined products of gold, silver, copper, lead, and zinc lode mines Utah ranked fourth among the states. It was also fourth in rank in the value of output of mines of which the principal product was gold and silver, fourth in value of output of mines producing principally copper, and ninth in value of output of mines producing principally lead and zinc. Production of these metals was chiefly from the Big Cottonwood and Little Cottonwood districts and the Bingham district in Salt Lake County. Important production was obtained also from Juab, Summit, Utah, and Tooele Counties.

Coal mining was second in importance in Utah in 1919, with production valued at \$12,632,035, representing 30.4 per cent of the total value of mineral products of the state, and employing 37 per cent of the total number of wage earners. The principal producing county was Carbon in central Utah. There was some production also from Emery, Grand, Iron, Summit, and Uintah Counties.

The production of asphaltic materials was third in importance among the mining industries in Utah, which ranked first among the states in the output of such materials. Statistics for the industry in this state can not be shown, however, without disclosure of individual operations.

Operations for development on mining properties, not productive in 1919, were reported by 48 enterprises—1, an iron ore mine and the others, gold, silver, copper, lead or zinc mines. These enterprises, reporting a combined capital of \$8,521,338, employed 394 wage earners and expended \$1,695,273, which figures represent 3.8 per cent of the aggregate number of wage earners and 5 per cent of the aggregate expenditures reported for all mining operations in the state in 1919.

The character of organizations conducting mining enterprises in Utah in 1919 is shown in Table 3, which clearly brings out the extent of corporate control. Of all the enterprises, 81.6 per cent were operated by corporations, which employed 99.1 per cent of the total number of wage earners and reported 99.4 per cent of the total value of products. Table 3 also

shows that on a basis of average value of products per enterprise for all industries combined and for the metal-mining and coal-mining industries separately corporations conducted the largest enterprises.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Utah, 85.1 per cent were in classes having no wage earners or fewer than 101, and the wage earners employed were only 20.2 per cent of the total number of wage earners. On the other hand, only 14.9 per cent of the total number of enterprises had more than 100 wage earners each, and these enterprises employed 79.8 per cent of the total number of wage earners. The larger enterprises were in the metal-mining and coal-mining industries.

Table 5 shows that in 42 per cent of the enterprises employing wage earners and for 31.2 per cent of the total number of wage earners the prevailing hours of labor were 44 to 53 and that in 50.7 per cent of the enterprises and for 67.1 per cent of the total number of wage earners the hours of labor were 54 to 62 per week. The 8-hour day was the rule with a 7-day week prevailing in the metal-mining industry and a 6-day week in the coal-mining industry.

The statistics for wage earners presented in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	141	188	-25.0	Capital.....	\$178,521,276	\$81,000,043	120.4
Number of mines and quarries.....	154	226	-33.3	Principal expenses:			
Persons engaged.....	10,768	10,890	-0.6	Salaries.....	1,916,913	1,197,537	60.1
Proprietors and firm members, total.....	53	102	-48.0	Wages.....	17,198,652	8,986,861	91.4
Number performing manual labor in or about the mines and quarries.....	16	39	.....	Contract work.....	461,178	265,008	85.3
Salaried employees.....	858	629	36.4	Supplies and materials <sup>2</sup> .....	8,043,453	4,027,324	99.7
Wage earners (average number).....	9,847	10,089	-2.4	Fuel and power.....	2,019,110	1,024,119	88.0
Power used (horsepower).....	86,131	47,226	82.4	Royalties and rents.....	150,955	71,911	109.9
				Taxes.....	2,066,154	211,629	874.5
				Value of products.....	41,510,802	22,682,282	88.0

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

<sup>2</sup> Includes cost of ore purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	141	9,847	100.0	\$41,510,802	100.0	Coal, bituminous.....	27	3,647	37.0	\$12,632,035	30.4
Gold, silver, copper, lead, and zinc, lode mines.....	86	5,874	59.7	27,824,207	67.0	Limestone.....	7	148	1.5	291,234	0.7
						Rare metals <sup>1</sup> .....	5	17	0.2	37,958	0.1
						All other industries <sup>2</sup> .....	16	161	1.6	725,368	1.7

<sup>1</sup> Uranium and vanadium.

<sup>2</sup> Includes enterprises in industries as follows: Asphalt, 3; clay, 3; fluor spar, 1; gypsum, 2; iron ore, 2; mineral pigments, 1; phosphate rock, 1; sandstone, 2; slate, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	141	9,847	\$41,510,802	\$294,408	100.0	100.0	100.0
Corporation.....	115	9,769	41,253,243	358,715	81.6	99.1	99.4
Individual.....	12	45	139,168	11,597	8.5	0.5	0.3
Firm.....	14	43	119,391	8,628	9.9	0.4	0.3
GOLD, SILVER, COPPER, LEAD, AND ZINC, LODGE MINES.....	86	5,874	27,824,207	328,537	100.0	100.0	100.0
Corporation.....	77	5,849	27,719,741	359,997	89.5	99.6	99.6
Individual.....	4	10	55,794	13,949	4.7	0.2	0.2
Firm.....	5	15	48,672	9,734	5.8	0.3	0.2
COAL, BITUMINOUS.....	27	3,647	12,632,035	467,868	100.0	100.0	100.0
Corporation.....	18	3,619	12,554,081	697,449	66.7	99.2	99.4
Individual.....	3	9	19,545	6,515	11.1	0.2	0.2
Firm.....	6	19	58,409	9,735	22.2	0.5	0.5

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES.....</b>	<b>141</b>	<b>100.0</b>	<b>9,847</b>	<b>100.0</b>	<b>COAL, BITUMINOUS.....</b>	<b>27</b>	<b>100.0</b>	<b>3,647</b>	<b>100.0</b>
No wage earners.....	3	2.1			1 to 5.....	9	33.3	19	0.5
1 to 5.....	51	36.2	119	1.2	6 to 20.....	2	7.4	13	0.4
6 to 20.....	33	23.4	372	3.8	21 to 50.....	3	11.1	91	2.5
21 to 50.....	22	16.3	775	7.9	51 to 100.....	3	11.1	192	5.3
51 to 100.....	10	7.1	715	7.3	101 to 500.....	8	29.6	1,330	36.5
101 to 500.....	15	12.8	3,645	37.0	501 to 1,000.....	1	3.7	832	22.8
501 to 1,000.....	1	0.7	832	8.4	Over 1,000.....	1	3.7	1,170	32.1
Over 1,000.....	2	1.4	3,389	34.4					
<b>GOLD, SILVER, COPPER, LEAD, AND ZINC, LODE MINES.....</b>	<b>86</b>	<b>100.0</b>	<b>5,874</b>	<b>100.0</b>	<b>LIMESTONE.....</b>	<b>7</b>	<b>100.0</b>	<b>148</b>	<b>100.0</b>
No wage earners.....	2	2.3			1 to 5.....	2	28.6	6	4.1
1 to 5.....	28	32.6	74	1.2	6 to 20.....	1	14.3	20	13.5
6 to 20.....	25	29.1	273	4.6	21 to 50.....	4	57.1	122	82.4
21 to 50.....	13	15.1	470	8.0					
51 to 100.....	7	8.1	523	8.9	<b>RARE METALS.....</b>	<b>5</b>	<b>100.0</b>	<b>17</b>	<b>100.0</b>
101 to 500.....	10	11.6	2,315	39.4	1 to 5.....	4	80.0	6	35.3
Over 1,000.....	1	1.2	2,219	37.8	6 to 20.....	1	20.0	11	64.7

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
<b>All industries.....</b>	<b>138</b>	<b>9,847</b>	<b>1</b>	<b>7</b>	<b>5</b>	<b>69</b>	<b>58</b>	<b>3,070</b>	<b>70</b>	<b>6,612</b>	<b>4</b>	<b>89</b>
Gold, silver, copper, lead, and zinc, lode mines.....	84	5,874			1	4	27	835	55	5,016	1	19
Coal, bituminous.....	27	3,647	1	7	4	65	16	2,143	5	1,430	1	2
Limestone.....	7	148					2	29	3	51	2	68
Rare metals.....	5	17					3	5	2	12		
All other industries.....	15	161					10	58	5	108		

<sup>1</sup> Exclusive of 3 enterprises employing no wage earners in industries as follows: Gold, silver, copper, lead, and zinc, lode mines 2; slate, 1.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by italic figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries.....</b>	<b>10,241</b>	<b>12,246</b>	<b>10,898</b>	<b>9,601</b>	<b>9,335</b>	<b>8,477</b>	<b>8,480</b>	<b>9,548</b>	<b>10,510</b>	<b>10,797</b>	<b>10,775</b>	<b>11,048</b>	<b>11,159</b>	<b>68.8</b>
<b>Producing enterprises.....</b>	<b>9,847</b>	<b>11,982</b>	<b>10,636</b>	<b>9,283</b>	<b>8,937</b>	<b>8,098</b>	<b>8,072</b>	<b>9,184</b>	<b>10,069</b>	<b>10,319</b>	<b>10,315</b>	<b>10,577</b>	<b>10,712</b>	<b>67.5</b>
Gold, silver, copper, lead, and zinc, lode mines.....	5,874	7,925	6,863	5,549	5,371	4,604	4,525	5,335	5,995	6,171	6,147	6,134	6,069	57.1
Coal, bituminous.....	3,647	3,728	3,684	3,417	3,286	3,204	3,255	3,531	3,731	3,791	3,841	4,065	4,299	75.2
Limestone.....	148	158	142	164	156	146	144	158	152	168	172	149	129	67.5
Rare metals.....	17	1				2			19	27	42	87	56	1.8
All other industries.....	161	150	147	153	144	148	160	172	172	164	173	181	196	71.7
<b>Nonproducing enterprises.....</b>	<b>394</b>	<b>264</b>	<b>260</b>	<b>408</b>	<b>398</b>	<b>379</b>	<b>348</b>	<b>364</b>	<b>441</b>	<b>478</b>	<b>460</b>	<b>471</b>	<b>447</b>	<b>82.3</b>

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.						Non-producing enterprises. <sup>4</sup>
		Total.	Gold, silver, copper, lead, and zinc, lode mines. <sup>1</sup>	Coal, bituminous.	Limestone.	Rare metals. <sup>2</sup>	All other. <sup>3</sup>	
Number of enterprises.....	189	141	86	27	7	5	16	48
Number of mines and quarries.....	202	154	88	34	8	5	19	48
Capital.....	\$187,042,614	\$178,521,276	\$141,525,488	\$32,531,106	\$194,530	\$45,500	\$3,924,652	\$8,521,338
Principal expenses:								
Salaries and wages—								
Officers.....	\$385,371	\$369,099	\$233,350	\$117,994	\$605		\$16,650	\$16,472
Superintendents and managers.....	\$594,246	\$644,232	\$458,005	\$140,576	\$14,742	\$3,371	\$27,538	\$50,014
Technical employees.....	\$268,718	\$266,620	\$216,368	\$50,252				\$2,006
Clerks, etc.....	\$641,706	\$636,962	\$357,634	\$263,071	\$1,031	\$700	\$14,526	\$4,744
Wage earners.....	\$17,767,681	\$17,196,652	\$9,176,378	\$7,598,767	\$187,171	\$18,075	\$216,261	\$571,020
Supplies and materials.....	\$8,608,344	\$7,745,492	\$5,950,733	\$1,564,955	\$41,139	\$12,728	\$175,937	\$363,352
Cost of ore purchased as material.....	\$297,961	\$297,961	\$297,961					
Fuel.....	\$854,969	\$834,490	\$643,734	\$169,948	\$5,488	\$295	\$15,015	\$20,499
Power.....	\$1,233,253	\$1,184,630	\$1,072,015	\$99,096	\$7,227		\$5,392	\$48,628
Royalties and rents.....	\$168,081	\$150,955	\$95,633	\$39,273	\$2,000	\$565	\$13,484	\$17,076
Taxes.....	\$2,075,086	\$2,065,154	\$1,568,738	\$452,219	\$1,216	\$10	\$43,031	\$9,862
Contract work.....	\$617,396	\$491,178	\$486,878				\$4,300	\$126,418
Expenditures for development (included in the above items).....	\$4,863,916	\$3,168,643	\$2,894,494	\$224,566	\$3,000	\$7,142	\$39,441	\$1,695,273
Value of products.....	\$41,510,802	\$41,510,802	\$27,824,207	\$12,632,035	\$291,234	\$37,958	\$725,368	
Persons engaged in industry.....	11,246	10,758	6,446	3,926	159	27	198	488
Proprietors and firm members (total).....	76	53	13	26		5	9	23
Number performing manual labor.....	16	16	5	9		1	1	
Salaried officers.....	117	96	57	35			4	21
Superintendents and managers.....	230	200	128	46	9	4	13	30
Technical employees.....	138	136	110	26				2
Clerks, etc.....	444	426	266	146	2	1	11	18
Wage earners (average number).....	10,241	9,847	5,874	3,647	148	17	161	364
Wage earners, by occupation (Dec. 15):								
Above ground (total).....	4,665	4,536	2,885	1,363	159	35	94	129
Below ground (total).....	6,722	6,370	3,341	2,902		22	105	352
Foremen, shift bosses, etc.—								
Above ground.....	204	190	145	26	7	3	9	14
Below ground.....	176	159	123	32		1	3	17
Enginemen, holstmen, electricians, mechanics, etc.—								
Above ground.....	1,158	1,124	817	289	10		8	34
Below ground.....	528	494	286	208				34
Miners, quarrymen, and drillmen, including their helpers—								
Above ground.....	345	327	245	5	53	10	14	18
Below ground.....	2,651	2,510	1,117	1,343		12	38	141
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—								
Above ground.....	955	943	415	511	7	5	5	12
Below ground.....	1,578	1,516	620	859		3	34	62
Muckers, loaders, laborers, and others not classified—								
Above ground.....	1,065	1,014	345	532	82	17	38	51
Below ground.....	1,739	1,691	1,185	460		6	30	98
Wage earners employed in mills and beneficiating plants—								
Above ground.....	938	938	018				20	
Number of females included in wage earners reported above—								
Above ground.....	20	12	2	8		2		8
Mineral land operated..... acres.....	841,460	824,592	264,760	46,991	1,931	1,774	9,628	16,878
Land controlled, total..... acres.....	358,560	330,962	268,546	56,665	1,931	1,774	11,048	18,598
Mineral land owned.....	334,395	319,143	261,283	44,532	1,809	603	10,916	15,242
Mineral land leased.....	8,659	7,023	3,081	2,519	122	1,171	130	1,636
Timber and other lands owned and leased.....	15,516	13,796	4,182	9,614				1,720
Power used: Aggregate horsepower.....	89,629	86,131	61,085	24,029	360		657	3,498
Prime movers (horsepower, total).....	31,879	31,083	20,601	9,840	75		567	796
Steam engines—								
Number.....	279	275	229	40	3		3	4
Horsepower.....	26,925	26,730	18,735	7,755	60		180	195
Steam turbines—								
Number.....	4	4		4				
Horsepower.....	2,085	2,085		2,085				
Internal-combustion engines—								
Number.....	40	22	18		1		3	18
Horsepower.....	1,032	471	403		15		53	561
Water wheels and turbines—								
Number.....	9	8	5				3	1
Horsepower.....	1,337	1,797	1,463				384	40
Purchased power (horsepower, total).....	57,760	55,048	40,484	14,189	285		90	2,702
Electric motors operated by purchased current—								
Number.....	2,416	2,300	2,018	276	3		3	116
Horsepower.....	57,325	54,783	40,169	14,189	285		90	2,562
Other equipment operated by purchased power—								
Horsepower.....	425	315	315					110
Electric motors run by current generated by enterprise using:								
Number.....	186	166	23	143				20
Horsepower.....	8,875	8,645	831	7,764				230
Fuel used:								
Coal, bituminous..... tons, 2,000 pounds.....	* 198,824	* 197,397	111,853	82,907	760	2	* 1,875	1,427
Coke..... tons, 2,000 pounds.....	1,123	1,123	1,123					
Wood..... cords.....	334	39	9			30		295
Fuel oils..... barrels.....	3,626	2,276	1,357		736		183	1,350
Gasoline and other volatile oils..... barrels.....	1,736	1,487	1,406		34		47	249

<sup>1</sup> Includes 1 reduction mill operated independently of mines and 2 operations on dumps and old tailings.

<sup>2</sup> Uranium and vanadium.

<sup>3</sup> Includes enterprises as follows: Asphalt, 3; clay, 3; flourspar, 1; gypsum, 2; iron ore, 2; mineral pigments, 1; phosphate rock, 1; sandstone, 2; slate, 1.

<sup>4</sup> Includes enterprises as follows: Gold, silver, copper, lead, or zinc, lode mines, 47; iron ore, 1.

<sup>5</sup> Includes 31 tons (net) anthracite coal.

## VERMONT.

Vermont, which ranks forty-second among the states in size (land area 9,124 square miles) and forty-fifth in population (352,428 in 1920), ranked thirty-third in mineral production in 1919. On the basis of total number of persons engaged in the mining industries and the average number of wage earners employed, the state also ranked thirty-third.

The total value of products for all mines and quarries was \$8,555,030, which was an increase of 4.1 per cent over the corresponding amount reported at the census of 1909. This increase and the increases in salaries, cost of supplies and materials and fuel and power, as shown in Table 1, are largely due to general price increases. An actual decrease in quarrying and mining in Vermont is indicated by the decrease in the number of enterprises, number of mines and quarries operated, and the large decrease in the average number of wage earners employed in the industries. The addition of Federal income taxes since 1909 will account for the large increase in taxes shown.

The mining and quarrying industries reported in Vermont for 1919 were granite, marble, slate, talc and soapstone, limestone, clay, and copper. Although low in rank on the basis of total mineral production, Vermont ranked first among the states in the production of granite and marble, and second in the production of slate and talc and soapstone. These principal industries—granite, marble, slate, and talc and soapstone—accounted for 98.1 per cent of the total value of mineral products and employed 97.6 per cent of all wage earners engaged in the mines and quarries of Vermont in 1919. The quarrying and mining industries in Vermont are ranked by value of products for 1919 in Table 2, which also shows a different order of rank on the basis of number of wage earners employed.

The granite industry, which leads all other mineral industries in the state, reported products to the amount of \$3,563,734, which was 41.7 per cent of the total value of products of all mines and quarries in Vermont and was 19.5 per cent of the total value of products for the granite industry of the United States (\$18,279,345) in 1919. The production of granite was reported chiefly from Washington County, but also from Caledonia, Orange, Orleans, and Windham Counties.

The marble industry, which was second in importance in the state in 1919, reported products valued at \$2,108,872, or 24.7 per cent of the total value of all mineral products in the state and 48 per cent of the total value of products of the marble quarrying industry in the United States (\$4,397,912). The production of marble, reported chiefly from Rutland County, was

also reported from Addison, Bennington, Franklin, and Washington Counties.

The Vermont slate quarrying industry, which was third in rank among the mineral industries in the state for 1919 with a production valued at \$2,057,388, or 24 per cent of the total value of all mineral products in the state, was second only to that of Pennsylvania and amounted to 36 per cent of the total value of products for the slate-quarrying industry in the United States (\$5,720,792). The production reported from Vermont was quarried in Rutland County.

Talc and soapstone mining was fourth in importance among the mineral industries in Vermont in 1919 with a production valued at \$663,261, or 7.8 per cent of the total value of all mineral products in the state and 28.8 per cent of the total value of products of the talc and soapstone industry in the United States (\$2,302,393). The production of talc and soapstone in Vermont in 1919 came from Addison, Lamoille, Washington, Windham, and Windsor Counties.

Table 3 shows that among the operators of quarries and mines in Vermont corporations are in the majority. Enterprises having this form of organization conducted 61.3 per cent of the total number of enterprises, employed 83.8 per cent of the total number of wage earners, and reported 88.8 per cent of the total value of products.

The relatively large number of small enterprises, as determined by the average number of wage earners employed, is shown in Table 4. Of the total number of enterprises in Vermont in 1919, 92.5 per cent were in classes having no wage earners or less than 101, and such enterprises employed 58.5 per cent of the total number of wage earners. Enterprises employing more than 100 wage earners numbered 7 and constituted 7.5 per cent of the total number of enterprises, and employed 41.5 of the total number of wage earners. These larger enterprises were all in the principal quarrying industries—granite, marble, and slate.

Table 5 shows that in 57.6 per cent of all enterprises employing wage earners and for 52.1 per cent of the wage earners the hours of labor were 54 to 62 per week. In the marble and slate industries the 9-hour day prevailed, while in the granite industry shorter hours were reported.

The statistics for wage earners given in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

## MINES AND QUARRIES—VERMONT.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	93	137	-32.1	Capital.....	\$10,710,058	\$13,992,096	-23.5
Number of mines and quarries.....	109	183	-40.1	Principal expenses:			
Persons engaged.....	3,229	8,656	-62.6	Salaries.....	448,733	370,237	21.2
Proprietors and firm members, total.....	60	160	-62.5	Wages.....	3,041,551	4,449,315	-31.6
Number performing manual labor in or about the mines and quarries.....	18	63	.....	Contract work.....	91,750	64,698	41.8
Salaried employees.....	243	353	-31.2	Supplies and materials.....	1,272,796	905,157	40.6
Wage earners (average number).....	2,936	8,145	-64.0	Fuel and power.....	425,398	382,438	17.4
Power used (horsepower).....	28,119	25,668	9.5	Royalties and rents.....	58,506	84,332	-30.6
				Taxes.....	306,564	72,147	324.9
				Value of products.....	8,555,030	8,221,323	4.1

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	93	2,936	100.0	\$8,555,030	100.0	Slate.....	38	1,039	35.4	\$2,067,388	24.0
Granite.....	27	1,062	36.2	3,563,734	41.7	Talc and soapstone.....	6	195	6.6	663,261	7.8
Marble.....	15	570	19.4	2,108,872	24.7	Limestone.....	4	40	1.4	76,152	0.9
						All other industries <sup>1</sup> .....	3	30	1.0	85,623	1.0

<sup>1</sup> Includes enterprises in industries as follows: Clay, 1; copper, 2.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	93	2,936	\$8,555,030	\$91,990	100.0	100.0	100.0
Corporation.....	57	2,461	7,596,820	133,278	61.3	83.5	88.8
Individual.....	19	215	543,725	28,617	20.4	7.3	6.4
Firm <sup>1</sup> .....	17	260	414,485	24,381	18.3	8.9	4.8
GRANITE.....	27	1,062	3,563,734	131,990	100.0	100.0	100.0
Corporation.....	13	919	3,153,017	242,540	48.1	86.5	88.5
Individual and firm.....	14	143	410,717	20,337	51.9	13.5	11.5
MARBLE AND LIMESTONE.....	19	610	2,156,024	115,001	100.0	100.0	100.0
Corporation.....	16	593	2,154,006	134,631	84.2	97.2	98.6
Individual.....	3	17	30,928	10,309	15.8	2.8	1.4
SLATE.....	38	1,039	2,067,388	54,142	100.0	100.0	100.0
Corporation.....	21	742	1,605,968	76,475	55.3	71.4	78.1
Individual.....	3	52	89,790	29,930	7.9	5.0	4.4
Firm <sup>1</sup> .....	14	245	361,630	25,331	36.8	23.6	17.6

<sup>1</sup> Includes 1 other form of organization.

MINES AND QUARRIES—VERMONT.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES</b> .....	<b>93</b>	<b>100.0</b>	<b>2,996</b>	<b>100.0</b>	<b>MARBLE</b> .....	<b>15</b>	<b>100.0</b>	<b>570</b>	<b>100.0</b>
No wage earners.....	1	1.1	.....	.....	1 to 5.....	2	13.3	3	0.5
1 to 5.....	21	22.6	59	2.0	6 to 20.....	6	40.0	71	12.5
6 to 20.....	33	34.4	375	12.8	21 to 50.....	5	33.3	153	26.8
21 to 50.....	25	26.9	788	26.8	101 to 500.....	2	13.3	343	60.2
51 to 100.....	7	7.5	496	16.9	<b>TALC AND SOAPSTONE</b> .....	<b>6</b>	<b>100.0</b>	<b>195</b>	<b>100.0</b>
101 to 500.....	7	7.5	1,218	41.5	6 to 20.....	3	50.0	38	19.5
<b>GRANITE</b> .....	<b>27</b>	<b>100.0</b>	<b>1,062</b>	<b>100.0</b>	21 to 50.....	1	16.7	23	11.8
No wage earners.....	1	3.7	.....	.....	51 to 100.....	2	33.3	134	68.7
1 to 5.....	11	40.7	25	2.4	<b>LIMESTONE</b> .....	<b>4</b>	<b>100.0</b>	<b>40</b>	<b>100.0</b>
6 to 20.....	4	14.8	51	4.8	1 to 5.....	1	25.0	5	12.5
21 to 50.....	6	22.2	311	19.9	6 to 20.....	2	50.0	12	30.0
51 to 100.....	2	7.4	145	12.7	21 to 50.....	1	25.0	28	57.5
101 to 500.....	3	11.1	630	59.3	<b>SLATE</b> .....	<b>38</b>	<b>100.0</b>	<b>1,089</b>	<b>100.0</b>
No wage earners.....	1	2.6	.....	.....	1 to 5.....	6	15.8	23	2.2
1 to 5.....	11	28.9	176	16.2	6 to 20.....	15	39.5	176	16.2
6 to 20.....	4	10.5	176	16.2	21 to 50.....	12	31.6	378	36.4
21 to 50.....	6	15.8	311	29.3	51 to 100.....	3	7.9	217	20.9
51 to 100.....	2	5.3	145	13.7	101 to 500.....	2	5.3	245	23.6
101 to 500.....	3	7.9	217	20.9					
No wage earners.....	1	2.6	.....	.....					
1 to 5.....	6	15.8	23	2.2					
6 to 20.....	15	39.5	176	16.2					
21 to 50.....	12	31.6	378	36.4					
51 to 100.....	3	7.9	217	20.9					
101 to 500.....	2	5.3	245	23.6					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—				INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—			
	Enterprises.	Wage earners.	36 to 43.		54 to 62.			Enterprises.	Wage earners.	36 to 43.		54 to 62.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.				Enterprises.	Wage earners.	Enterprises.	Wage earners.
<b>All industries</b> .....	<b>192</b>	<b>2,996</b>	<b>39</b>	<b>1,405</b>	<b>53</b>	<b>1,681</b>	<b>Marble</b> .....	<b>15</b>	<b>570</b>	<b>15</b>	<b>570</b>		
<b>Granite</b> .....	<b>126</b>	<b>1,062</b>	<b>26</b>	<b>1,062</b>	<b>.....</b>	<b>.....</b>	<b>Talc and soapstone</b> .....	<b>6</b>	<b>195</b>	<b>6</b>	<b>195</b>		
<b>Slate</b> .....	<b>38</b>	<b>1,089</b>	<b>11</b>	<b>335</b>	<b>27</b>	<b>704</b>	<b>Limestone</b> .....	<b>4</b>	<b>40</b>	<b>1</b>	<b>5</b>		
							<b>All other</b> .....	<b>3</b>	<b>30</b>	<b>1</b>	<b>3</b>		

<sup>1</sup> Exclusive of 1 enterprise employing no wage earners.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
		<b>All industries</b> .....	<b>2,936</b>	<b>2,725</b>	<i>2,698</i>	<b>2,721</b>	<b>2,856</b>	<b>3,015</b>	<b>3,156</b>	<b>3,146</b>	<b>2,877</b>	<b>2,860</b>	<b>3,005</b>	
<b>Granite</b> .....	<b>1,062</b>	<b>855</b>	<b>907</b>	<b>892</b>	<b>1,003</b>	<b>1,090</b>	<b>1,171</b>	<b>1,171</b>	<b>1,185</b>	<b>1,132</b>	<b>1,170</b>	<b>1,098</b>	<b>1,100</b>	<b>72.2</b>
<b>Slate</b> .....	<b>1,039</b>	<b>933</b>	<b>976</b>	<b>981</b>	<b>1,039</b>	<b>1,099</b>	<b>1,162</b>	<b>1,189</b>	<b>871</b>	<b>895</b>	<b>976</b>	<b>1,149</b>	<b>1,167</b>	<b>73.8</b>
<b>Marble</b> .....	<b>570</b>	<b>509</b>	<b>530</b>	<b>566</b>	<b>585</b>	<b>614</b>	<b>601</b>	<b>572</b>	<b>579</b>	<b>588</b>	<b>600</b>	<b>561</b>	<b>535</b>	<b>82.4</b>
<b>Talc and soapstone</b> .....	<b>195</b>	<b>224</b>	<b>180</b>	<b>172</b>	<b>133</b>	<b>169</b>	<b>169</b>	<b>171</b>	<b>191</b>	<b>201</b>	<b>211</b>	<b>220</b>	<b>244</b>	<b>65.9</b>
<b>Limestone</b> .....	<b>40</b>	<b>40</b>	<b>24</b>	<b>39</b>	<b>36</b>	<b>61</b>	<b>45</b>	<b>41</b>	<b>38</b>	<b>41</b>	<b>35</b>	<b>39</b>	<b>49</b>	<b>45.9</b>
<b>All other industries</b> .....	<b>30</b>	<b>197</b>	<b>71</b>	<b>71</b>	<b>10</b>	<b>12</b>	<b>12</b>	<b>11</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>15</b>	<b>12</b>	<b>9.3</b>



TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	PRODUCING ENTERPRISES.						
	Total.	Granite.	Marble.	Slate.	Tale and soapstone.	Limestone.	All other. <sup>1</sup>
Number of enterprises.....	93	27	15	38	6	4	3
Number of mines and quarries.....	109	31	26	39	7	4	3
Capital.....	\$10,710,068	\$3,202,754	\$3,627,551	\$2,212,313	\$1,241,879	\$151,081	\$274,000
Principal expenses:							
Salaries and wages—							
Officers.....	\$192,907	\$78,887	\$30,024	\$52,027	\$31,009		
Superintendents and managers.....	\$166,919	\$47,853	\$13,189	\$64,472	\$30,124	\$4,315	\$6,908
Technical employees.....	\$5,658	\$1,008	\$1,200	\$1,575		\$500	\$1,375
Clerks, etc.....	\$83,254	\$21,109	\$25,554	\$36,129	\$7,009	\$2,478	\$3,775
Wage earners.....	\$3,041,531	\$1,225,256	\$553,078	\$976,143	\$214,523	\$35,798	\$36,451
Supplies and materials.....	\$1,272,736	\$778,489	\$180,320	\$226,644	\$88,623	\$24,450	\$4,350
Fuel.....	\$220,278	\$135,472	\$13,349	\$26,535	\$32,615	\$5,050	\$7,312
Power.....	\$205,122	\$39,379	\$37,211	\$37,221	\$25,270	\$6,004	\$5,051
Royalties and rents.....	\$55,006	\$7,609	\$10,700	\$34,103	\$6,084		
Taxes.....	\$306,534	\$152,786	\$36,185	\$28,768	\$12,500	\$795	\$590
Contract work.....	\$91,750	\$91,080		\$10,637	\$19,133		
Expenditures for development (included in the above items).....	\$36,499	\$25,444	\$500	\$10,555			
Value of products.....	\$8,555,080	\$3,568,734	\$2,108,872	\$2,057,888	\$663,261	\$76,152	\$85,623
Persons engaged in industry.....	3,239	1,138	610	1,171	226	82	42
Proprietors and firm members (total).....	60	16		38	1	3	2
Number performing manual labor.....	18	7		11			
Salaried officers.....	52	14	3	25	10		
Superintendents and managers.....	88	21	6	37	14	4	4
Technical employees.....	11	2	1	3		1	4
Clerks, etc.....	94	23	30	29	6	4	2
Wage earners (average number).....	2,936	1,062	570	1,039	195	40	30
Wage earners by occupation (Dec. 15):							
Above ground (total).....	2,983	1,112	599	994	172	51	55
Below ground (total).....	339			208	73		58
Foremen, shift bosses, etc.—							
Above ground.....	164	62	20	65	8	2	7
Below ground.....	15			8	4		3
Engineers, hoistmen, electricians, mechanics, etc.—							
Above ground.....	338	141	33	128	15	4	17
Below ground.....	7			2	3		2
Miners, quarrymen, and drillmen, including their helpers—							
Above ground.....	1,420	668	341	404		4	3
Below ground.....	175			148	17		10
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—							
Above ground.....	55	28	9	7	3	11	2
Below ground.....	23				15		8
Muckers, loaders, laborers, and others not classified—							
Above ground.....	358	135	18	160	12	28	5
Below ground.....	119			50	34		35
Wage earners employed in mills and beneficiating plants—							
Above ground.....	648	83	178	280	134	2	21
Mineral land operated..... acres.....	16,048	1,987	9,448	1,355	2,738	80	445
Land controlled, total..... acres.....	18,169	2,748	9,670	2,323	2,745	88	600
Mineral land owned.....	14,417	1,932	8,408	825	2,727	80	445
Mineral land leased.....	1,681	55	1,040	530	6		
Timber and other lands owned and leased.....	2,121	761	222	968	12	3	158
Power used: Aggregate horsepower.....	28,119	10,739	7,354	6,447	2,073	483	973
Prime movers (horsepower, total).....	8,990	6,112	910	458	527	408	575
Steam engines—							
Number.....	120	88	7	12	6	6	1
Horsepower.....	5,887	3,837	690	357	530	408	75
Steam turbines—							
Number.....	1	1					
Horsepower.....	1,500	1,500					
Internal-combustion engines—							
Number.....	3	2			1		
Horsepower.....	82	25			7		
Water wheels and turbines—							
Number.....	7	2	1	2			2
Horsepower.....	1,571	750	220	101			500
Purchased power (horsepower, total).....	19,129	4,627	6,444	5,989	1,546	75	398
Electric motors operated by purchased current—							
Number.....	696	86	310	237	44	3	16
Horsepower.....	19,109	4,657	6,444	5,989	1,546	75	398
Other equipment operated by purchased power—							
Horsepower.....	20	20					
Electric motors run by current generated by enterprise using:							
Number.....	26		9	4		5	8
Horsepower.....	664		245	44		195	180
Fuel used:							
Coal, anthracite..... tons, 2,240 pounds.....	2,328	1,561	208	156	405		
Coal, bituminous..... tons, 2,000 pounds.....	24,886	14,537	2,083	3,578	2,849	887	1,000
Coke..... tons, 2,000 pounds.....	218				218		
Wood..... cords.....	261	140	23	39	57	2	
Gasoline and other volatile oils..... barrels.....	67	15			50	2	

<sup>1</sup> Includes enterprises as follows: Clay, 1; copper, 2.<sup>2</sup> Includes 3 female wage earners reported by 1 enterprise.

## VIRGINIA.

Virginia, which ranks thirty-third among the states in size (land area 40,262 square miles) and twentieth in population (2,309,187 in 1920), ranked twenty-first in value of mineral products for 1919. The state ranked eighteenth in both the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The total value of products of all mines and quarries in Virginia in 1919 was \$29,363,449, an increase of 233.8 per cent over the corresponding amount reported at the census of 1909. This increase and the increases in wages, cost of supplies and materials and fuel and power, as shown in Table 1, are due in large part to general price increases during the census interval and are not a proper measure of growth. Nor, on account of these large increases, can the small decreases in number of mines and quarries operated and the average number of wage earners employed be interpreted as indicating a decline in mining.

The mining industries reported in Virginia in 1919, classified according to principal products and listed in order of value of products, were bituminous coal, limestone, iron ore, pyrite, talc and soapstone, gypsum, granite, slate, manganese ore, mica, barytes, ores of rare metals (titanium), millstones, sandstone, clay, mineral pigments, and abrasive materials. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mining industry in Virginia in 1919 was the production of bituminous coal. This industry included 108 out of a total of 202 enterprises in the state, employed 77.1 per cent of the total number of wage earners, and reported products to the value of \$23,763,440, or 80.9 per cent of the total value of products of the state. The productive coal fields were in 8 southwestern counties which produced high-rank bituminous coals suitable for a variety of uses. Virginia in 1919 was ninth in order of importance among the coal-producing states.

Among the industries of minor importance in the state were pyrite mining with products valued at \$864,974, by which Virginia gained first place in this industry in the United States in 1919; talc and soapstone mining in which Virginia ranked third; and the

production of millstones in which Virginia ranked second.

In addition to the operations of producing enterprises there were reported only relatively unimportant operations for the purpose of development of non-producing properties.

The mining enterprises in the state of Virginia in 1919 are classified according to character of operating organization in Table 3, which shows that for all industries combined and for the principal industries corporations outnumbered other forms of organization, employed the greatest number of wage earners, and reported the largest part of the value of products.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Virginia 167, or 82.7 per cent, were in classes having fewer than 101 wage earners, and these enterprises employed 30.2 per cent of the total number of wage earners. On the other hand, only 35 enterprises had more than 100 wage earners each and these enterprises employed 69.8 per cent of the total number of wage earners. Of the larger enterprises 28 were in the coal-mining industry, and the remainder in the gypsum, limestone, pyrite, and talc and soapstone industries.

Table 5 shows that in 47.5 per cent of the total number of mining enterprises and for 73.6 per cent of the total number of wage earners, the hours of labor were 44 to 53 per week, and that in 46.5 per cent of the enterprises and for 23.4 per cent of the wage earners the hours of labor were 54 to 62 per week. In the coal-mining industry the hours which prevailed were 44 to 53 per week, and the 8-hour day and 6-day week was the rule. In other mining industries and in the quarrying industries the prevailing hours were 54 to 62 per week and the 10-hour day and 6-day week was the rule.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	202	150	34.7	Capital.....	\$57,035,775	\$55,992,693	1.9
Number of mines and quarries.....	216	244	-11.5	Principal expenses:			
Persons engaged.....	15,537	15,960	-2.7	Salaries.....	1,690,162	612,621	175.9
Proprietors and firm members, total.....	71	86		Wages.....	16,106,249	5,229,787	208.0
Number performing manual labor in or about the mines and quarries.....	19	15		Contract work.....	340,851	119,028	186.4
Salaried employees.....	919	617	48.9	Supplies and materials.....	4,780,370	1,173,866	305.5
Wage earners (average number).....	14,547	15,257	-4.7	Fuel and power.....	1,216,894	484,527	151.2
Power used (horsepower).....	57,880	34,630	67.1	Royalties and rents.....	830,435	418,353	98.5
				Taxes.....	1,243,918	150,074	728.9
				Value of products.....	29,363,449	8,795,646	233.8

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	202	14,547	100.0	\$29,363,449	100.0	Pyrite.....	5	549	3.8	\$864,974	2.9
Coal, bituminous.....	108	11,215	77.1	23,763,440	80.9	Granite.....	7	157	1.1	259,569	0.9
Limestone.....	31	777	5.3	1,610,544	5.5	Slate.....	4	210	1.4	208,068	0.7
Iron ore.....	21	623	4.3	1,186,127	4.0	Manganese.....	9	119	0.8	183,864	0.6
						All other industries <sup>1</sup> .....	17	897	6.2	1,291,863	4.4

<sup>1</sup> Includes enterprises in industries as follows: Abrasive materials, 1; berytes, 1; clay, 1; gypsum, 2; mica, 2; millstones, 2; mineral pigments, 1; rare metals (titanium), 1; sandstone, 2; talc and soapstone, 4.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	202	14,547	\$29,363,449	\$145,364	100.0	100.0	100.0
Corporation.....	164	13,998	28,312,199	172,635	81.2	96.2	96.4
Individual.....	16	119	181,542	11,946	7.9	0.8	0.6
Firm <sup>1</sup> .....	22	430	869,708	39,532	10.9	3.0	3.0
COAL, BITUMINOUS.....	108	11,215	23,763,440	220,032	100.0	100.0	100.0
Corporation.....	88	11,032	23,457,245	206,560	81.5	98.4	98.7
Individual.....	9	89	150,026	16,670	8.3	0.8	0.6
Firm.....	11	94	156,169	14,197	10.2	0.8	0.7
LIMESTONE.....	31	777	1,610,544	51,953	100.0	100.0	100.0
Corporation.....	19	483	954,563	50,240	61.3	62.2	59.2
Individual.....	4	16	12,800	3,125	12.9	1.3	0.8
Firm.....	8	284	643,481	80,435	25.8	36.6	40.0
IRON ORE.....	21	623	1,186,127	56,482	100.0	100.0	100.0
Corporation.....	21	623	1,186,127	56,482	100.0	100.0	100.0
PYRITE.....	5	549	864,974	172,995	100.0	100.0	100.0
Corporation.....	5	549	864,974	172,995	100.0	100.0	100.0
GRANITE.....	7	157	259,569	37,061	100.0	100.0	100.0
Corporation.....	4	105	189,511	47,378	57.1	66.9	72.0
Firm <sup>1</sup> .....	3	52	70,058	23,353	42.9	33.1	27.0
SLATE.....	4	210	208,068	50,767	100.0	100.0	100.0
Corporation.....	4	210	208,068	50,767	100.0	100.0	100.0

<sup>1</sup> Includes 1 other form of organization.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES.....</b>	<b>202</b>	<b>100.0</b>	<b>14,547</b>	<b>100.0</b>	<b>IRON ORE.....</b>	<b>21</b>	<b>100.0</b>	<b>623</b>	<b>100.0</b>
1 to 5.....	40	19.8	131	0.9	1 to 5.....	5	23.8	18	2.9
6 to 20.....	56	27.7	668	4.6	6 to 20.....	5	23.8	59	9.5
21 to 50.....	41	20.3	1,450	10.0	21 to 50.....	9	42.9	400	64.2
51 to 100.....	30	14.9	2,143	14.7	51 to 100.....	2	9.5	146	23.4
101 to 500.....	29	14.4	6,314	43.4					
501 to 1,000.....	6	3.0	3,841	26.4	<b>PYRITE.....</b>	<b>5</b>	<b>100.0</b>	<b>549</b>	<b>100.0</b>
<b>COAL, BITUMINOUS.....</b>	<b>108</b>	<b>100.0</b>	<b>11,215</b>	<b>100.0</b>	51 to 100.....	2	40.0	146	26.9
1 to 5.....	19	17.6	64	0.6	101 to 500.....	3	60.0	403	73.4
6 to 20.....	23	25.9	318	2.8					
21 to 50.....	14	13.0	450	4.0	<b>SLATE.....</b>	<b>4</b>	<b>100.0</b>	<b>210</b>	<b>100.0</b>
51 to 100.....	19	17.6	1,410	12.6	21 to 50.....	2	50.0	82	39.0
101 to 500.....	22	20.4	5,132	45.8	51 to 100.....	2	50.0	128	61.0
501 to 1,000.....	6	5.6	3,841	34.2					
<b>LIMESTONE.....</b>	<b>31</b>	<b>100.0</b>	<b>777</b>	<b>100.0</b>	<b>GRANITE.....</b>	<b>7</b>	<b>100.0</b>	<b>157</b>	<b>100.0</b>
1 to 5.....	10	32.3	37	3.5	6 to 20.....	3	42.9	32	20.4
6 to 20.....	8	25.8	114	14.7	21 to 50.....	3	42.9	67	42.7
21 to 50.....	8	25.8	239	30.8	51 to 100.....	1	14.3	58	36.9
51 to 100.....	3	9.7	192	24.7					
101 to 500.....	2	6.5	206	26.4					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
<b>All industries.....</b>	<b>202</b>	<b>14,547</b>	<b>4</b>	<b>105</b>	<b>6</b>	<b>318</b>	<b>96</b>	<b>10,711</b>	<b>94</b>	<b>3,401</b>	<b>2</b>	<b>12</b>
Coal, bituminous.....	108	11,215	4	105	5	310	84	10,413	13	375	2	12
Limestone.....	31	777					4	62	27	715		
Iron ore.....	21	623					3	56	18	567		
Pyrite.....	5	549					1	147	4	402		
Slate.....	4	210							4	210		
Granite.....	7	157					1	11	6	146		
Manganese.....	9	119			1	8	1	4	7	107		
All other industries.....	17	897					2	18	15	879		

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries.....</b>	<b>14,666</b>	<b>15,067</b>	<b>14,657</b>	<b>13,820</b>	<b>15,408</b>	<b>13,856</b>	<b>13,843</b>	<b>14,929</b>	<b>15,208</b>	<b>15,335</b>	<b>15,539</b>	<b>15,125</b>	<b>15,207</b>	<b>86.3</b>
<b>Producing enterprises.....</b>	<b>14,547</b>	<b>14,932</b>	<b>14,541</b>	<b>13,722</b>	<b>15,308</b>	<b>13,746</b>	<b>13,732</b>	<b>14,821</b>	<b>15,096</b>	<b>15,224</b>	<b>15,398</b>	<b>14,982</b>	<b>15,062</b>	<b>86.4</b>
Coal, bituminous.....	11,215	11,769	11,343	10,470	12,874	10,242	10,513	11,334	11,690	11,750	11,998	11,646	11,865	83.1
Limestone.....	777	650	611	637	818	623	809	855	862	837	837	762	638	68.5
Iron ore.....	623	791	764	761	898	543	536	549	534	556	599	613	642	67.5
Pyrite.....	549	680	602	545	521	508	487	540	547	533	545	557	548	64.7
Slate.....	210	168	168	189	195	202	234	226	237	234	223	226	226	65.4
Granite.....	157	84	90	139	173	183	186	179	188	178	175	162	147	44.7
Manganese.....	119	56	214	235	243	276	94	88	63	65	40	27	28	9.4
All other industries.....	897	770	751	748	786	905	933	1,080	999	970	991	990	933	73.1
<b>Nonproducing enterprises.....</b>	<b>119</b>	<b>135</b>	<b>116</b>	<b>98</b>	<b>98</b>	<b>110</b>	<b>111</b>	<b>108</b>	<b>112</b>	<b>111</b>	<b>141</b>	<b>143</b>	<b>145</b>	<b>67.6</b>

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.									Non-producing enterprises. <sup>3</sup>
		Total.	Coal, bituminous. <sup>1</sup>	Limestone.	Iron ore.	Pyrite.	Granite.	Slate.	Manganese.	All other. <sup>2</sup>	
Number of enterprises.....	206	202	108	31	21	5	7	4	9	17	4
Number of mines and quarries.....	220	216	118	32	22	5	7	5	9	18	4
<b>Capital</b> .....	\$58,352,912	\$57,035,775	\$46,790,454	\$1,825,288	\$2,331,315	\$1,160,933	\$368,500	\$290,024	\$1,158,464	\$3,112,797	\$1,317,137
<b>Principal expenses:</b>											
Salaries and wages—											
Officers.....	\$402,594	\$390,594	\$310,716	\$15,612	\$5,765	\$5,825	\$7,520	\$10,650	\$12,056	\$31,450	\$3,000
Superintendents and managers.....	\$687,259	\$674,231	\$492,694	\$34,222	\$38,303	\$28,582	\$10,520	\$6,140	\$13,011	\$50,759	\$13,028
Technical employees.....	\$30,384	\$75,254	\$69,655	.....	\$2,054	\$2,400	.....	.....	\$1,145	.....	\$5,130
Clerks, etc.....	\$551,547	\$541,083	\$427,054	\$24,213	\$15,737	\$33,648	\$2,200	\$2,719	\$4,131	\$32,371	\$10,464
Wage earners.....	\$16,207,806	\$16,108,249	\$12,961,591	\$682,902	\$652,826	\$681,621	\$135,435	\$132,491	\$116,066	\$724,717	\$99,559
Supplies and materials.....	\$4,837,172	\$4,760,370	\$3,432,448	\$437,142	\$238,477	\$202,435	\$18,248	\$7,453	\$42,439	\$381,728	\$76,802
Fuel.....	\$746,182	\$740,098	\$283,796	\$117,151	\$51,645	\$144,143	\$12,252	\$16,497	\$10,901	\$108,713	\$6,084
Power.....	\$483,370	\$476,796	\$439,263	\$15,496	.....	.....	.....	.....	.....	\$21,512	\$6,574
Royalties and rents.....	\$831,635	\$830,435	\$679,464	\$28,806	\$47,777	\$26,270	\$2,434	\$7,831	\$20,562	\$17,250	\$1,200
Taxes.....	\$1,245,640	\$1,243,918	\$1,130,332	\$27,653	\$50,881	\$3,657	\$5,911	\$2,523	\$4,737	\$13,234	\$1,762
Contract work.....	\$345,333	\$340,851	\$222,280	\$12,446	.....	.....	.....	.....	\$36,470	\$4,405	\$4,492
Expenditures for development (included in the above items).....	\$1,143,408	\$919,206	\$647,496	\$16,021	\$31,136	\$120,977	.....	\$2,000	\$40,540	\$61,016	\$224,202
Value of products.....	\$20,363,449	\$20,363,449	\$23,763,440	\$1,610,544	\$1,186,127	\$364,974	\$259,569	\$203,068	\$183,864	\$1,201,863	.....
Persons engaged in industry.....	15,674	15,637	11,940	848	663	593	176	224	144	949	137
Proprietors and firm members (total).....	71	71	42	21	.....	.....	5	.....	1	2	.....
Number performing manual labor.....	19	19	11	8	.....	.....	.....	.....	.....	.....	.....
Salaried officers.....	137	135	98	8	2	4	6	6	10	2	.....
Superintendents and managers.....	294	290	198	20	23	11	7	4	10	17	4
Technical employees.....	66	62	54	.....	3	3	.....	.....	2	.....	4
Clerks, etc.....	440	432	333	22	13	28	3	4	6	23	8
Wage earners (average number).....	14,666	14,547	11,215	777	623	549	157	210	119	897	119
Wage earners by occupation (Dec. 15):											
Above ground (total).....	5,301	5,181	2,246	548	488	298	177	155	290	679	120
Below ground (total).....	10,496	10,474	9,512	.....	335	264	.....	71	10	282	22
Foremen, shift bosses, etc.—											
Above ground.....	248	242	104	42	41	11	7	3	13	21	6
Below ground.....	308	307	289	.....	10	12	.....	3	2	11	1
Engineers, holstmen, electricians, mechanics, etc.—											
Above ground.....	1,106	1,065	661	119	60	73	17	19	45	71	43
Below ground.....	1,078	1,078	1,044	.....	26	.....	.....	.....	.....	8	.....
Miners, quarrymen, and drillmen, including their helpers—											
Above ground.....	830	820	157	279	153	11	61	20	29	110	10
Below ground.....	5,288	5,280	4,838	.....	140	106	.....	14	8	174	8
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—											
Above ground.....	488	473	280	62	17	11	24	49	20	10	15
Below ground.....	2,423	2,419	2,278	.....	58	36	.....	21	.....	26	4
Muckers, loaders, laborers, and others not classified—											
Above ground.....	2,036	1,990	1,012	332	160	130	68	64	121	103	46
Below ground.....	1,399	1,390	1,068	.....	101	110	.....	33	.....	63	9
Wage earners employed in mills and beneficiating plants—											
Above ground.....	591	591	32	14	57	62	.....	.....	62	364	.....
Number of females included in wage earners reported above—											
Above ground.....	31	31	13	3	.....	.....	.....	.....	.....	15	.....
Number of wage earners under 16 years of age included in those reported above—											
Above ground.....	3	3	.....	1	.....	.....	.....	.....	2	.....	.....
Mineral land operated..... acres.....	498,104	494,909	397,976	2,275	33,752	887	315	636	47,910	10,158	3,195
Land controlled, total..... acres.....	520,507	516,909	407,324	5,051	40,643	3,987	320	696	47,910	10,738	3,898
Mineral land owned.....	368,077	365,982	312,376	2,798	30,956	509	300	556	11,096	7,397	2,095
Mineral land leased.....	131,066	129,966	86,639	452	2,796	378	15	80	36,815	2,761	1,100
Timber and other lands owned and leased.....	21,364	20,961	8,309	1,776	6,891	3,100	5	.....	.....	580	708
Power used: Aggregate horsepower.....	58,315	57,890	41,630	5,723	2,304	1,438	650	445	670	5,020	435
Prime movers (horsepower, total).....	24,076	23,641	10,016	4,706	2,304	1,438	600	445	670	3,462	435
Steam engines—											
Number.....	269	266	91	55	34	29	9	14	12	22	8
Horsepower.....	20,722	20,372	9,228	3,395	2,304	1,318	600	445	642	2,440	350
Steam turbines—											
Number.....	5	5	1	3	.....	1	.....	.....	.....	.....	.....
Horsepower.....	1,530	1,530	600	810	.....	120	.....	.....	.....	.....	.....
Internal-combustion engines—											
Number.....	38	37	19	13	.....	.....	.....	.....	3	2	1
Horsepower.....	347	337	188	109	.....	.....	.....	.....	28	12	10
Water wheels and turbines—											
Number.....	6	5	.....	1	.....	.....	.....	.....	.....	4	1
Horsepower.....	1,477	1,402	.....	392	.....	.....	.....	.....	.....	1,010	75
Purchased power (horsepower, total).....	34,239	34,239	31,614	1,017	.....	.....	50	.....	.....	1,558	.....
Electric motors operated by purchased current—											
Number.....	1,012	1,012	944	18	.....	.....	1	.....	.....	49	.....
Horsepower.....	34,239	34,239	31,614	1,017	.....	.....	50	.....	.....	1,558	.....
Electric motors run by current generated by enterprise using:											
Number.....	325	325	258	17	1	13	.....	3	.....	35	.....
Horsepower.....	12,205	12,205	9,775	827	10	390	.....	310	.....	893	.....
Fuel used:											
Coal, anthracite..... tons, 2,240 pounds..	64	64	.....	61	.....	.....	.....	.....	.....	3	.....
Coal, bituminous..... tons, 2,000 pounds..	210,721	209,851	113,881	27,994	12,930	28,651	2,246	3,637	1,642	18,370	870
Coke..... tons, 2,000 pounds..	170	170	.....	.....	.....	.....	.....	.....	.....	170	.....
Wood..... cords.....	1,386	1,386	.....	518	170	200	.....	.....	325	173	.....
Fuel oils..... barrels.....	864	706	90	500	.....	.....	.....	.....	.....	26	168
Gasoline and other volatile oils..... barrels..	549	499	272	212	.....	.....	.....	.....	11	4	50

<sup>1</sup> Includes 1 coal mining enterprise on the Virginia-Kentucky state line reported as a Virginia operation.

<sup>2</sup> Includes enterprises as follows: Abrasive materials, 1; barrytes, 1; clay, 1; gypsum, 2; mica, 2; millstones, 2; mineral pigments, 1; rare metals (titanium), 1; sandstone, 2; talc and soapstone, 4.

<sup>3</sup> Includes enterprises as follows: Coal, bituminous, 1; limestone, 1; pyrite, 1; zinc, 1.

## WASHINGTON.

Washington, which ranks nineteenth among the states in size (land area 66,836 square miles) and thirtieth in population (1,356,621 in 1920), ranked twenty-seventh in value of mineral products for 1919. The state also ranked twenty-seventh on the basis of total number of persons engaged in the mining industries and the average number of wage earners employed.

The total value of products of mines and quarries in Washington in 1919 was \$13,329,129 which amount includes, in addition to the receipts by operators for the products indicated by the names of the industries specified, \$70,769, the value of by-products, of power sold, and work or miscellaneous services for other enterprises. The total value of products for 1919 is larger by 26.5 per cent than the corresponding amount reported at the census of 1909. This increase and the increases in wages and cost of supplies and materials and fuel and power, as shown in Table 1, are largely due to general price increases and, therefore, can not properly be used to measure the growth of mining during the census period 1909 to 1919. The average number of wage earners employed, which is a better basis for comparison, was 26.9 per cent less in 1919 than in 1909.

The mining industries reported for 1919, classified by principal products and listed in the order of value of products, were bituminous coal, magnesite, gold and silver from lode mines, basalt, copper, lead and zinc, granite, sandstone, clay, abrasive materials, iron ore, talc and soapstone, asbestos, and gold from placer mines. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mineral industry in Washington in 1919 was bituminous coal mining which reported 35 out of a total of 83 productive enterprises in the state, employed 87.4 per cent of the total number of wage earners, and reported products valued at \$10,737,656, which represents 80.6 per cent of the total value of products of all mining industries in the state. Production was reported principally from Kittitas, King, and Pierce but also from Lewis, Skagit, Thurston, and Whatcom Counties.

Mining and calcining of magnesite was second in importance among the mineral industries in the state, and in this industry, which is confined to Stevens County, Washington leads all other states.

The metalliferous lode mining industry, producing gold, silver, copper, lead and zinc ores, was third in importance in Washington in 1919, with an output valued by the producers at \$670,869, which came

chiefly from Stevens and Ferry but also from Okanogan and Snohomish Counties.

Operations on nonproducing mining properties were reported by 15 enterprises in Washington in 1919; these included 11 metalliferous lode mines, 2 coal mines, and 2 petroleum and natural-gas ventures. These enterprises, with a combined capital of \$2,946,772, employed 105 wage earners and expended \$381,662 for development during 1919. These figures represent 2 per cent of the aggregate number of wage earners and 3.2 per cent of the aggregate expenditures reported for all mining operations in the state.

The form or character of organizations conducting mining enterprises in Washington in 1919 is shown in Table 3, which brings out the preponderance of corporations. They operated 78.3 per cent of all mining enterprises, employed 98 per cent of the total number of wage earners, and reported 98.1 per cent of the total value of products. In each of the leading industries also the corporation was the most common form of operating organization and conducted the more important enterprises.

The relatively large number of small enterprises, as measured by the average number of wage earners, is shown in Table 4. Of the 83 mining enterprises in Washington, 70 were in classes having no wage earners or fewer than 101, and such enterprises employed 28.6 per cent of the total number of wage earners. On the other hand, only 13 of the total number of enterprises had more than 100 wage earners each, but these enterprises employed 71.5 per cent of the total number of wage earners. The larger enterprises were in the coal and magnesite mining industries.

Table 5 shows that in a majority of enterprises and for 95.1 per cent of all the wage earners the hours of labor were 44 to 53 per week, the 8-hour day and the 6-day week prevailing. These hours of labor prevailed in each of the mining industries, except metalliferous lode mining and the mining of magnesite, in which the 8-hour day and 7-day week was the rule.

The statistics for wage earners given in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the mining industries during the census year. The unusually low minimum in the coal industry in November, instead of in the summer months as has been usual, was the result of the great November strike and affects the figures for all industries combined.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

## MINES AND QUARRIES—WASHINGTON.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	83	93	.....	Principal expenses: Salaries..... Wages..... Contract work..... Supplies and materials..... Fuel and power..... Royalties and rents..... Taxes..... Value of products.....			
Number of mines and quarries.....	93	170	-45.3		\$662,546	\$344,666	82.2
Persons engaged.....	5,397	7,214	-25.2		7,465,652	5,901,007	25.7
Proprietors and firm members, total.....	33	48	.....		86,624	14,462	499.0
Number performing manual labor in or about the mines and quarries.....	16	16	.....		1,728,585	843,025	105.0
Salaried employees.....	314	282	19.8		947,330	245,852	285.3
Wage earners (average number).....	5,050	6,904	-26.9		177,429	141,231	25.6
Power used (horsepower).....	38,198	20,742	84.2		288,318	98,598	202.7
Capital.....	\$22,914,934	\$18,074,691	75.3		13,329,129	10,537,556	26.5

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	83	5,050	100.0	\$13,329,129	100.0	Basalt.....	8	99	2.0	\$340,742	1.8
Coal, bituminous.....	35	4,413	87.4	10,737,656	80.6	Granite.....	5	42	0.8	74,956	0.6
Gold, silver, copper, lead and zinc, lode mines.....	19	221	4.4	670,869	5.0	Abrasive materials.....	4	15	0.3	16,799	0.1
						All other industries <sup>1</sup> .....	12	262	5.2	1,588,135	11.9

<sup>1</sup> Includes enterprises in industries as follows: Asbestos, 1; clay, 4; gold, placer mines, 1; iron ore, 1; magnesite, 3; sandstone, 1; talc and soapstone, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprises.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	83	5,050	\$13,329,129	\$160,592	100.0	100.0	100.0
Corporation.....	45	4,950	13,078,858	201,136	78.3	98.0	98.1
Individual.....	7	11	37,783	5,398	8.4	0.2	0.3
Firm.....	11	89	217,488	19,772	13.3	1.8	1.6
COAL, BITUMINOUS.....	35	4,413	10,737,656	306,790	100.0	100.0	100.0
Corporation.....	31	4,361	10,645,891	343,400	88.6	98.8	99.1
Firm.....	4	52	92,265	23,066	11.4	1.2	0.9
GOLD, SILVER, COPPER, LEAD AND ZINC, LODGE MINES.....	19	221	670,869	35,309	100.0	100.0	100.0
Corporation.....	16	216	647,728	40,483	84.2	97.7	96.6
Firm <sup>1</sup> .....	3	5	23,141	7,714	15.8	2.3	3.4
BASALT AND GRANITE.....	13	141	315,700	24,285	100.0	100.0	100.0
Corporation.....	7	106	209,175	29,882	53.8	75.2	66.3
Individual.....	3	8	33,181	11,960	23.1	5.7	10.5
Firm.....	3	27	73,344	24,448	23.1	19.1	23.2
ABRASIVE MATERIALS.....	4	13	16,769	4,192	100.0	100.0	100.0
Corporation.....	4	13	16,769	4,192	100.0	100.0	100.0

<sup>1</sup> Includes 1 individual.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES.....</b>	<b>83</b>	<b>100.0</b>	<b>8,050</b>	<b>100.0</b>	<b>GOLD, SILVER, COPPER, LEAD AND ZINC, LODE MINES.....</b>	<b>19</b>	<b>100.0</b>	<b>231</b>	<b>100.0</b>
No wage earners.....	5	6.0	.....	.....	No wage earners.....	2	10.5	.....	.....
1 to 5.....	22	26.5	60	1.2	1 to 5.....	9	47.4	18	8.1
6 to 20.....	30	36.1	225	4.5	6 to 20.....	5	26.3	75	33.9
21 to 50.....	13	15.7	378	7.5	21 to 50.....	2	10.5	45	20.8
51 to 100.....	10	12.0	777	15.4	51 to 100.....	1	5.3	82	37.1
101 to 500.....	12	14.5	2,594	51.4					
Over 1,000.....	1	1.2	1,016	20.1	<b>BASALT AND GRANITE.....</b>	<b>13</b>	<b>100.0</b>	<b>141</b>	<b>100.0</b>
<b>COAL, BITUMINOUS.....</b>	<b>35</b>	<b>100.0</b>	<b>4,413</b>	<b>100.0</b>	No wage earners.....	1	7.7	.....	.....
1 to 5.....	2	5.7	7	0.2	1 to 5.....	3	23.1	10	7.1
6 to 20.....	3	8.6	38	0.9	6 to 20.....	8	61.5	74	52.5
21 to 50.....	10	28.6	301	6.8	51 to 100.....	1	7.7	57	40.4
51 to 100.....	8	22.9	638	14.5					
101 to 500.....	11	31.4	2,413	54.7					
Over 1,000.....	1	2.9	1,016	23.0					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—					
	Enterprises.	Wage earners.	35 and under.		44 to 53.		54 to 62.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries.....	178	5,050	1	2	63	4,803	14	245
Coal, bituminous.....	35	4,413	1	2	34	4,411	.....	.....
Gold, silver, copper, lead and zinc, lode mines.....	17	221	.....	.....	6	14	11	207
Basalt and granite.....	12	141	.....	.....	12	141	.....	.....
Abrasive materials.....	4	13	.....	.....	4	13	.....	.....
All other industries.....	10	262	.....	.....	7	224	3	38

<sup>1</sup> Exclusive of 5 enterprises employing no wage earners in industries as follows: Basalt, 1; clay, 1; gold, silver, copper, lead and zinc, lode mines, 2; gold, placer mines, 1.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	5,155	<b>6,004</b>	5,802	5,715	5,359	5,182	5,086	5,318	5,595	5,813	5,717	<i>1,998</i>	4,271	33.1
Producing enterprises.....	5,050	<b>5,966</b>	5,737	5,672	5,321	5,104	4,948	5,195	5,455	5,659	5,567	<i>1,844</i>	4,142	31.0
Coal, bituminous.....	4,413	<b>5,359</b>	5,248	5,195	4,835	4,698	4,531	4,575	4,852	4,814	4,714	<i>1,018</i>	3,367	19.4
Gold, silver, copper, lead and zinc, lode mines.....	231	<b>263</b>	184	174	194	209	210	205	250	<b>269</b>	255	235	193	62.1
Basalt.....	99	<b>55</b>	33	38	36	50	98	134	167	108	188	165	135	19.6
Granite.....	42	<b>39</b>	49	40	48	43	37	41	51	42	41	39	34	66.7
Abrasive materials.....	13	<b>1</b>	3	2	7	16	20	27	28	24	14	7	7	3.6
All other industries.....	262	<b>389</b>	290	223	151	88	59	213	307	391	375	370	406	12.8
Nonproducing industries.....	105	<b>78</b>	65	43	38	78	108	123	140	154	150	154	129	24.7
Gold, silver, copper, lead or zinc, lode mines.....	50	<b>30</b>	30	24	25	31	53	57	63	71	76	70	70	31.6
All other industries.....	55	<b>48</b>	35	19	13	47	55	66	77	83	74	84	59	15.5



TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.							NONPRODUCING ENTERPRISES.		
		Total.	Coal, bituminous.	Gold, silver, copper, lead and zinc, lode mines.	Basalt.	Granite.	Abrasive materials.	All other. <sup>1</sup>	Total.	Gold, silver, copper, lead or zinc, lode mines.	All other. <sup>2</sup>
Number of enterprises.....	98	83	35	19	8			12	15	11	4
Number of mines and quarries.....	106	93	43	19	10	5	4	12	13	11	2
<b>Capital.....</b>	<b>\$25,861,706</b>	<b>\$22,914,934</b>	<b>\$15,987,834</b>	<b>\$3,670,636</b>	<b>\$183,113</b>	<b>\$208,492</b>	<b>\$319,377</b>	<b>\$2,545,982</b>	<b>\$2,946,772</b>	<b>\$2,659,997</b>	<b>\$286,776</b>
<b>Principal expenses:</b>											
Salaries and wages—											
Officers.....	\$129,168	\$117,043	\$90,459	\$14,304	\$1,500	\$1,800	\$1,500	\$17,480	\$12,125	\$6,125	\$6,000
Superintendents and managers.....	\$299,156	\$280,215	\$185,261	\$35,903	\$3,425	\$3,142	\$4,750	\$42,734	\$18,941	\$13,261	\$5,680
Technical employees.....	\$72,162	\$66,475	\$47,818	\$7,945	\$4,614			\$6,098	\$5,687	\$3,332	\$2,355
Clerks, etc.....	\$200,646	\$198,813	\$171,476	\$6,951	\$4,200	\$351	\$1,640	\$14,195	\$11,832	\$1,833	\$1,833
Wage earners.....	\$7,629,447	\$7,465,662	\$6,515,988	\$381,090	\$102,382	\$50,308	\$15,558	\$400,331	\$163,795	\$77,325	\$86,470
Supplies and materials.....	\$1,890,278	\$1,728,585	\$1,378,254	\$163,132	\$42,468	\$6,110	\$8,980	\$131,641	\$161,692	\$63,588	\$98,106
Fuel.....	\$795,540	\$798,730	\$647,724	\$22,675	\$18,519	\$6,668	\$1,082	\$192,662	\$6,310	\$3,054	\$3,756
Power.....	\$162,100	\$158,000	\$94,733	\$30,224	\$940	\$1,738		\$30,910	\$3,500	\$3,500	
Royalties and rents.....	\$186,844	\$177,429	\$166,279	\$3,457	\$2,244	\$190	\$374	\$4,885	\$9,415	\$725	\$8,690
Taxes.....	\$286,419	\$283,318	\$247,041	\$21,128	\$1,608	\$847	\$584	\$12,110	\$6,101	\$1,911	\$4,190
Contract work.....	\$94,373	\$96,024	\$90,612	\$9,783				\$16,229	\$7,740	\$470	\$7,270
Expenditures for development (included in the above items).....	\$1,152,728	\$771,066	\$651,784	\$98,399		\$3,000	\$4,500	\$25,433	\$381,662	\$170,185	\$211,477
Value of products.....	\$13,329,129	\$13,329,129	\$10,737,656	\$670,869	\$240,742	\$74,958	\$16,769	\$1,588,135			
Persons engaged in industry.....	5,530	5,397	4,654	257	115	53	19	299	133	73	60
Proprietors and firm members (total).....	43	33	10	5	5	5		8	10	10	
Number performing manual labor.....	17	16	7	4	2	1		2	1	1	
Salaried officers.....	40	37	24	6	1	1		4	2	2	
Superintendents and managers.....	103	92	58	12	4	4	3	11	11	9	2
Technical employees.....	40	37	26	7	1			3	3	2	1
Clerks, etc.....	149	148	123	6	5	1	2	11	1	1	
Wage earners (average number).....	5,155	5,050	4,413	221	99	42	13	262	105	50	55
Wage earners by occupation (Dec. 15):											
Above ground (total).....	2,076	1,982	1,264	114	153	61	21	369	94	46	48
Below ground (total).....	4,024	3,971	3,705	196				70	53	42	11
Foremen, shift bosses, etc.—											
Above ground.....	98	96	64	8	6	5	1	12	2	1	1
Below ground.....	139	135	123	12				4	4		
Engineers, hoistmen, electricians, mechanics, etc.—											
Above ground.....	521	492	416	31	7	6	1	31	29	7	22
Below ground.....	196	195	183	12					1	1	
Miners, quarrymen, and drillmen, including their helpers—											
Above ground.....	262	257	45	5	100	23	8	78	5	5	
Below ground.....	2,379	2,344	2,262	66				16	35	30	5
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—											
Above ground.....	156	148	126	12				10	8	8	
Below ground.....	1,000	998	922	68				8	2		2
Muckers, loaders, laborers, and others not classified—											
Above ground.....	688	638	449	18	40	16	2	113	50	25	25
Below ground.....	310	299	215	38				46	11	7	4
Wage earners employed in mills and beneficiating plants—											
Above ground.....	351	351	164	40		11	9	127			
Number of females included in wage earners reported above—											
Above ground.....	7	6	4	2					1	1	
Number of wage earners under 16 years of age included in those reported above—											
Above ground.....	3	3	3								
Mineral and oil land operated.....acres..	79,426	73,061	65,940	3,007	212	157	1,784	1,961	6,365	2,331	3,984
Land controlled, total.....acres..	95,265	89,151	80,958	3,567	212	159	1,784	2,441	7,114	3,130	5,984
Mineral and oil land owned.....	55,509	48,404	44,368	2,257	183	157	1,223	1,811	2,105	1,911	194
Mineral and oil land leased.....	29,157	24,897	21,512	750	24		1,661	650	4,260	470	3,790
Timber and other lands owned and leased.....	16,599	15,860	14,778	560		32		490	749	749	
Power used: Aggregate horsepower.....	38,938	38,198	32,190	2,122	1,020	246	295	2,325	735	545	190
Prime movers (horsepower, total).....	24,862	24,332	20,857	1,269	980	176	295	755	560	370	190
Steam engines—											
Number.....	131	126	98	5	10	4	2	7	5	4	1
Horsepower.....	20,942	20,662	19,006	195	845	136	225	255	280	280	50
Steam turbines—											
Number.....	7	7	7								
Horsepower.....	1,781	1,781	1,781								
Internal-combustion engines—											
Number.....	51	41	5	20	3	2	4	7	10	3	7
Horsepower.....	1,789	1,539	70	724	135	40	70	500	260	110	140
Water wheels and turbines—											
Number.....	5	4		4					1	1	
Horsepower.....	380	350		350					30	30	
Purchased power (horsepower, total).....	14,041	13,866	11,333	853	40	70		1,570	175	175	
Electric motors operated by purchased current—											
Number.....	287	282	196	15	2	6		63	5	5	
Horsepower.....	13,841	13,666	11,333	653	40	70		1,570	175	175	
Other equipment operated by purchased power—											
Horsepower.....	200	200		200							
Electric motors run by current generated by enterprise using:											
Number.....	315	315	315								
Horsepower.....	10,619	10,619	10,619								
Fuel used:											
Coal, bituminous.....tons, 2,000 pounds..	197,668	197,152	173,052	250	534	673	165	22,478	516	20	496
Wood.....cords.....	3,109	2,747		1,337	336	291	3	780	362	362	
Fuel oils.....barrels.....	47,085	47,085	23	564	3,180		20	48,308			
Gasoline and other volatile oils.....barrels..	2,420	2,110	108	1,652	104	100	15	136	310	150	160
Natural gas.....1,000 cubic feet.....	5,000								5,000		5,000

<sup>1</sup> Includes enterprises as follows: Asbestos, 1; clay, 4; gold, placer mines, 1; iron ore, 1; magnesite, 3; sandstone, 1; talc and soapstone, 1.  
<sup>2</sup> Includes enterprises as follows: Coal, bituminous, 2; petroleum and natural gas, 2.

## WEST VIRGINIA.

West Virginia, which ranks fortieth among the states in size (land area 24,022 square miles) and twenty-seventh in population (1,463,701 in 1920), ranked second in the value of mineral products in 1919. The state also ranked second in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross value of products of all mines, quarries, and wells in West Virginia in 1919 was \$295,606,620. This amount includes, in addition to the value of specified mineral products, amounts received by operators for other products, for power sold, and for work or miscellaneous services for other enterprises. The gross value of products shows an increase of 287.5 per cent as compared with the gross value of products reported at the census of 1909. Deducting from this gross value \$5,871,497, the value of natural gas sold by some producers to others who used it as material or sold it again, leaves \$289,735,123, the net value of products for 1919, which is 284.3 per cent larger than the corresponding value for 1909.

This increase and the increases in capital, wages, cost of supplies and materials and fuel and power, as shown in Table 1, although in large part due to general price increases during the census interval, nevertheless show growth in mining as do also the increases in number of enterprises, number of individual mines, quarries, and wells operated, and in average number of wage earners employed.

The mining industries in West Virginia in 1919, classified according to principal products, were bituminous coal, petroleum and natural gas, limestone, sandstone, and clay, which are ranked by value of products in the order named, in Table 2.

The leading industry was the mining of bituminous coal in which West Virginia was outclassed only by Pennsylvania. This industry included 926 enterprises, or 54 per cent of the total number in the state, employed 86.4 per cent of the total number of wage earners, and reported products to the value of \$193,108,343, or 65.3 per cent of the total. The state produces bituminous and semibituminous coals in varieties for all uses. The productive territory lies in a central belt extending across the state from northeast to southwest and in a zone along the Ohio River. The producing districts are part of the Northern and Middle Appalachian coal fields and occupy approximately 9,500 square miles in parts of 36 counties.

The industry second in importance was the production of petroleum and natural gas. The statistics here presented for this industry include data on the operation of plants engaged in the extraction of

gasoline from natural gas, whether such plants were connected with well operations or not. Seven hundred and fifty-one enterprises, or 43.8 per cent of the total number in the mineral industries of the state in 1919, were petroleum or natural-gas or natural-gas gasoline enterprises. They reported 12.2 per cent of the total number of wage earners and products valued at \$99,518,304, or 33.7 per cent of the total value of products of the state. The producing pools or local fields cover approximately 10,000 square miles throughout the northwestern half of the state, 30 counties reporting production in 1919.

The total value of products for the coal and petroleum and natural-gas industries combined was 99 per cent of the total value of products of the state. The other industries are therefore relatively small, but both the limestone and sandstone quarrying industries in West Virginia are important, in that they furnish a large share of the country's supply of limestone and sandstone (silica) used in manufacturing industries as well as furnishing stone for construction work.

In addition to the activities of producing mines, three coal and five petroleum and natural-gas enterprises reported operations for development of non-producing properties; these enterprises reported \$133,107 expended for development work, which represented a very small portion of the aggregate expenditures reported for the state.

Table 3 classifies the producing mining enterprises of the state according to form of organization and shows that, for the mining industries as a whole, corporations conducted 68.3 per cent of the total number of enterprises, employed 97.4 per cent of the wage earners, and reported 96.8 per cent of the total value of products. A preponderance of corporations over other forms of organization is shown for each of the industries considered separately.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in West Virginia, 16.2 per cent employed no wage earners, and 68.3 per cent employed fewer than 101 wage earners. On the other hand, 266 enterprises, or 15.6 per cent of the total number, had more than 100 wage earners each and employed 74.7 per cent of the total number of wage earners. Most of these larger enterprises were in the coal-mining industry; the remainder were in the petroleum and natural-gas and limestone industries.

Table 5 shows that in a majority of enterprises employing wage earners and for 76.7 per cent of the total number of wage earners the hours of labor

were 44 to 53 per week. In the coal-mining industry these hours prevailed with an 8-hour day and a 6-day week, but in the petroleum and natural-gas industry and in the quarrying industries longer hours were the rule.

The statistics for wage earners presented in Table

6, showing changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	1,714	798	114.8	Capital.....	\$533,138,835	\$219,466,909	142.9
Number of mines and quarries.....	1,325	718	84.5	Principal expenses:			
Number of petroleum and natural-gas wells.....	27,363	15,146	80.7	Salaries.....	14,954,240	3,838,884	290.6
Number of natural-gas gasoline plants.....	230			Wages.....	119,577,940	35,980,786	232.3
Persons engaged.....	110,327	77,814	41.8	Contract work.....	3,880,691	4,465,996	-12.9
Proprietors and firm members, total.....	1,667	909	83.4	Supplies and materials <sup>2</sup> .....	46,611,574	12,541,375	271.7
Number performing manual labor in or about the mines, quarries, and wells.....	124	81		Fuel and power.....	6,908,796	1,213,825	469.6
Salaried employees.....	7,848	3,495	124.5	Royalties and rents.....	14,845,553	7,796,172	90.4
Wage earners (average number).....	100,812	73,410	37.3	Taxes.....	11,078,927	965,443	1,047.5
Power used (horsepower).....	704,279	416,282	69.2	Value of products.....	295,606,620	79,367,899	287.5

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

<sup>2</sup> Includes cost of natural gas purchased as material and for resale.

TABLE 2.—MINING INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	1,714	100,812	100.0	\$295,606,620	100.0	Limestone.....	17	1,003	1.0	\$1,927,490	0.7
Coal, bituminous.....	926	87,095	86.4	193,108,343	65.3	Sandstone.....	15	343	0.3	885,588	0.3
Petroleum and natural gas.....	751	12,302	12.2	99,518,304	33.7	Clay.....	5	69	0.1	166,865	0.1

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	1,714	100,812	\$295,606,620	\$172,466	100.0	100.0	100.0
Corporation.....	1,170	98,207	286,062,517	244,498	68.3	97.4	96.8
Individual.....	166	704	2,920,406	17,698	9.7	0.7	1.9
Firm.....	351	1,847	6,155,479	17,537	20.5	1.8	2.1
Other.....	27	54	468,218	17,841	1.6	0.1	0.2
COAL, BITUMINOUS.....	926	87,095	193,108,343	208,540	100.0	100.0	100.0
Corporation.....	804	85,256	189,232,443	235,364	86.8	97.9	98.0
Individual.....	53	475	1,096,619	20,672	5.7	0.5	0.6
Firm <sup>1</sup> .....	69	1,364	2,780,281	40,294	7.5	1.6	1.4
PETROLEUM AND NATURAL GAS.....	751	12,302	99,518,304	132,514	100.0	100.0	100.0
Corporation.....	339	11,581	93,942,568	277,117	45.1	94.1	94.4
Individual.....	108	197	1,762,791	16,322	14.4	1.6	1.8
Firm.....	278	473	3,348,193	12,044	37.0	3.8	3.4
Other.....	26	51	464,757	17,875	3.5	0.4	0.5
LIMESTONE.....	17	1,003	1,927,490	113,382	100.0	100.0	100.0
Corporation.....	13	991	1,897,479	145,960	76.5	98.8	98.4
Firm <sup>1</sup> .....	4	12	30,011	7,508	23.5	1.2	1.6
SANDSTONE.....	15	343	885,588	59,039	100.0	100.0	100.0
Corporation.....	10	331	870,360	87,036	66.7	98.5	98.3
Firm <sup>1</sup> .....	5	12	15,228	3,046	33.3	3.5	1.7

<sup>1</sup> Includes 1 other form of organization.

<sup>2</sup> Includes 2 individuals.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR ALL INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	1,714	100.0	100,812	100.0	LIMESTONE.....	17	100.0	1,003	100.0
No wage earners.....	277	16.2	.....	.....	No wage earners.....	1	5.9	.....	.....
1 to 5.....	449	26.2	967	0.9	1 to 5.....	3	17.6	8	0.8
6 to 20.....	282	16.4	3,297	3.3	6 to 20.....	2	11.8	15	1.5
21 to 50.....	264	14.8	8,229	8.2	21 to 50.....	4	23.5	118	11.8
51 to 100.....	186	10.9	12,965	12.9	51 to 100.....	3	17.6	223	22.2
101 to 500.....	243	14.2	49,291	48.9	101 to 500.....	4	23.5	639	63.7
501 to 1,000.....	15	0.9	10,215	10.1					
Over 1,000.....	8	0.5	16,848	16.7	SANDSTONE.....	15	100.0	343	100.0
COAL, BITUMINOUS.....	926	100.0	87,095	100.0	1 to 5.....	6	40.0	17	5.0
1 to 5.....	85	9.2	263	0.3	6 to 20.....	5	33.3	60	17.5
6 to 20.....	192	20.7	2,373	2.7	21 to 50.....	1	6.7	22	6.4
21 to 50.....	231	24.9	7,601	8.7	51 to 100.....	3	20.0	244	71.1
51 to 100.....	170	18.4	11,770	13.5					
101 to 500.....	230	24.8	46,634	53.8	CLAY.....	5	100.0	69	100.0
501 to 1,000.....	13	1.4	8,915	10.2	6 to 20.....	3	60.0	22	31.9
Over 1,000.....	8	0.5	9,239	10.7	21 to 50.....	2	40.0	47	68.1
PETROLEUM AND NATURAL GAS..	751	100.0	12,302	100.0					
No wage earners.....	278	36.8	.....	.....					
1 to 5.....	355	47.3	660	5.4					
6 to 20.....	80	10.7	827	6.7					
21 to 50.....	16	2.1	481	3.7					
51 to 100.....	10	1.3	728	5.9					
101 to 500.....	9	1.2	1,788	14.4					
501 to 1,000.....	2	0.3	1,300	10.6					
Over 1,000.....	3	0.4	6,559	53.3					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR ALL INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—											
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
All industries.....	1,437	100,812	87	2,102	59	3,187	947	77,292	287	16,666	40	1,431	17	134
Coal, bituminous.....	926	87,095	30	2,028	46	3,170	801	74,125	47	7,702	2	70	.....	.....
Petroleum and natural gas.....	475	12,302	57	74	12	16	140	3,081	211	7,636	38	1,361	17	134
Limestone.....	16	1,003	.....	.....	.....	.....	.....	.....	16	1,003	.....	.....	.....	.....
Sandstone.....	15	343	.....	.....	1	1	2	25	12	317	.....	.....	.....	.....
Clay.....	5	69	.....	.....	.....	.....	.....	.....	1	8	.....	.....	.....	.....

<sup>1</sup> Exclusive of 277 enterprises employing no wage earners in the following industries: Limestone, 1; petroleum and natural gas, 276.

TABLE 6.—WAGE EARNERS, BY MONTHS, ALL INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by italicized figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	100,830	100,187	93,274	<b>98,824</b>	93,737	97,318	99,483	104,794	103,662	107,828	107,803	97,291	<b>108,769</b>	85.3
Producing enterprises.....	100,812	100,187	93,274	<b>98,824</b>	93,737	97,313	99,454	104,774	103,637	107,801	107,778	97,245	<b>108,729</b>	85.4
Coal, bituminous.....	87,095	87,044	80,378	<b>79,740</b>	80,329	85,650	85,670	90,496	92,194	98,614	98,739	83,379	<b>94,887</b>	84.0
Petroleum and natural gas.....	12,302	11,833	<b>11,825</b>	11,693	12,007	12,199	12,378	12,357	13,886	12,637	12,637	12,425	12,417	90.2
Limestone.....	1,003	907	912	<b>1,014</b>	1,089	1,064	994	1,022	<b>1,095</b>	1,063	980	992	<b>984</b>	82.8
Sandstone.....	343	325	291	<b>304</b>	294	343	351	330	285	380	357	379	<b>353</b>	78.7
Clay.....	69	78	68	<b>73</b>	68	67	61	69	67	68	65	70	<b>74</b>	78.2
Nonproducing enterprises.....	18	.....	.....	.....	5	29	20	25	27	25	46	39	.....	10.9
Coal, bituminous.....	13	.....	.....	.....	.....	24	19	18	20	24	28	28	.....	41.4
Petroleum and natural gas.....	5	.....	.....	.....	.....	5	5	7	7	7	17	11	.....	5.9

## MINES AND QUARRIES—WEST VIRGINIA.

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.					NONPRODUCING ENTERPRISES.			
		Total.	Coal, bituminous.	Petroleum and natural gas.	Limestone.	Sandstone.	Clay.	Total.	Coal, bituminous.	Petroleum and natural gas.
Number of enterprises.....	1,722	1,714	926	761	17	15	5	8	3	5
Number of mines and quarries.....	1,328	1,325	1,287		17	16	5	3	3	
Number of petroleum and natural-gas wells.....	27,363	27,363		27,363						
Number of natural-gas gasoline plants <sup>1</sup> .....	230	230		230						
Capital.....	\$533,664,006	\$533,138,835	\$344,014,848	\$186,275,406	\$1,275,947	\$1,226,569	\$346,005	\$325,173	\$308,410	\$221,763
Principal expenses:										
Salaries and wages—										
Officers.....	\$4,368,270	\$4,368,170	\$3,546,415	\$798,908	\$20,159	\$27,822	\$4,966	\$5,100	\$5,100	
Superintendents and managers.....	\$5,298,219	\$5,298,319	\$4,479,144	\$736,647	\$41,877	\$20,011	\$6,640	\$4,900	\$3,900	\$1,000
Technical employees.....	\$1,154,808	\$1,153,868	\$1,088,406	\$64,408	\$750			\$1,250	\$1,280	
Clerks, etc.....	\$4,115,407	\$4,114,202	\$3,183,598	\$899,067	\$20,243	\$8,987	\$2,307	\$1,205	\$240	\$965
Wage earners.....	\$119,596,964	\$119,577,949	\$106,761,150	\$12,416,434	\$979,624	\$338,156	\$62,585	\$19,015	\$14,261	\$4,764
Supplies and materials.....	\$40,804,621	\$40,740,077	\$28,988,284	\$14,227,832	\$419,472	\$94,192	\$15,277	\$64,544	\$10,277	\$54,267
Cost of natural gas purchased as material and for resale.....	\$5,871,497	\$5,871,497		\$5,871,497						
Fuel.....	\$3,921,553	\$3,921,486	\$2,728,087	\$1,088,710	\$30,933	\$30,298	\$3,462	\$68		\$68
Power.....	\$2,987,311	\$2,987,311	\$2,853,341	\$80,400	\$68,213	\$45,857				
Royalties and rents.....	\$14,860,543	\$14,846,853	\$5,926,261	\$8,902,607	\$11,384	\$4,354	\$1,847	\$4,990	\$3,500	\$1,490
Taxes.....	\$11,081,607	\$11,078,927	\$6,644,226	\$4,371,116	\$61,312	\$5,985	\$3,268	\$2,680	\$1,648	\$1,032
Contract work.....	\$3,944,580	\$3,889,691	\$406,581	\$3,484,110				\$54,899		\$54,899
Expenditures for development (included in the above items).....	\$17,649,406	\$17,516,298	\$4,235,208	\$13,270,683	\$2,530	\$7,877		\$133,107	\$35,018	\$98,089
Value of products.....	\$295,606,620	\$295,606,620	\$193,108,343	\$99,518,304	\$1,927,490	\$885,588	\$166,896			
Persons engaged in industry.....	110,364	110,327	93,767	15,032	1,063	385	80	37	20	17
Proprietors and firm members (total).....	1,676	1,667	273	1,376	8	9	1	9		9
Number performing manual labor.....	124	124	63	57	2	2				
Salaries officers.....	1,365	1,363	1,136	211	6	2	2	2	2	
Superintendents and managers.....	2,177	2,173	1,797	335	21	16	4	4	3	1
Technical employees.....	737	736	688	47	1			1	1	
Clerks, etc.....	3,579	3,576	2,778	761	24	9	4	3	1	2
Wage earners (average number).....	100,880	100,812	87,095	12,302	1,008	343	69	18	13	5
Wage earners by occupation (Dec. 15):										
Above ground (total).....	34,344	34,303	20,400	12,430	1,037	427	9	41	26	15
Below ground (total).....	75,582	75,578	75,513				65	4	4	
Foremen, shift bosses, etc.—										
Above ground.....	890	889	835		38	16		1	1	
Below ground.....	2,114	2,114	2,110					4		
Engineers, hoistmen, electricians, mechanics, etc.—										
Above ground.....	13,410	13,395	5,089	8,201	72	31	2	15	14	1
Below ground.....	4,971	4,971	4,967					4		
Miners, quarrymen, and drillmen, including their helpers—										
Above ground.....	2,013	2,013	1,419		448	145		1		
Below ground.....	37,966	37,962	37,925					37	4	
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—										
Above ground.....	3,713	3,713	3,646		35	30		2		
Below ground.....	16,853	16,853	16,843					10		
Muckers, loaders, laborers, and others not classified—										
Above ground.....	14,027	14,022	9,192	4,229	444	137		25	11	14
Below ground.....	13,678	13,678	13,668					10		
Wage earners employed in mills and beneficiating plants—										
Above ground.....	291	291	219					4		
Mineral and oil land operated..... acres.....	4,593,723	4,578,747	1,834,207	2,732,470	2,585	8,878	607	14,985	8,418	11,667
Land controlled, total..... acres.....	4,702,419	4,687,434	1,940,557	2,732,470	4,523	9,978	901	14,985	3,418	11,667
Mineral and oil land owned.....	1,092,408	1,092,408	1,092,408	65,677	899	788	462	2,068	2,068	
Mineral and oil land leased.....	3,527,731	3,514,884	838,090	2,666,793	1,716	8,140	145	12,897	1,330	11,667
Timber and other lands owned and leased.....	82,230	82,230	79,898			100	294			
Power used: Aggregate horsepower.....	704,326	704,279	355,479	338,194	6,373	3,486	747	47		47
Prime movers (horsepower, total).....	485,946	485,899	144,240	336,819	2,833	1,260	747	47		47
Steam engines—										
Number.....	4,280	4,280	778	3,416	56	27	3			
Horsepower.....	216,153	216,153	123,212	88,162	2,821	1,220	737			
Steam turbines—										
Number.....	40	40	40							
Horsepower.....	18,969	18,969	18,969							
Internal-combustion engines—										
Number.....	10,525	10,523	136	10,383	1	2	1	2		2
Horsepower.....	250,825	250,778	2,059	248,677	12	40	10	47		47
Purchased power (horsepower, total).....	218,380	218,380	211,239	1,375	3,540	2,226				
Electric motors operated by purchased current—										
Number.....	6,185	6,185	6,008	61	35	81				
Horsepower.....	218,323	218,323	211,182	1,375	3,540	2,226				
Other equipment operated by purchased power—										
Horsepower.....	57	57	57							
Electric motors run by current generated by enterprise using:										
Number.....	2,865	2,865	2,500	355	4		6			
Horsepower.....	95,084	95,084	87,256	7,615	120		93			
Fuel used:										
Coal, bituminous..... tons, 2,000 pounds.....	1,157,991	1,157,991	1,124,614	7,500	13,997	10,383	1,497			
Wood..... cords.....	50	50			50					
Fuel oils..... barrels.....	824	824	389	135						
Gasoline and other volatile oils..... barrels.....	2,541	2,541	2,424	108	9					
Natural gas..... 1,000 cubic feet.....	12,150,899	12,149,549	287,042	11,860,929		316	1,262	1,350		1,350

<sup>1</sup> Exclusive of 1 enterprise, which operated a plant that produced also carbon black, included in the census of manufactures.<sup>2</sup> Includes 2 wage earners under 16 years of age.

## WISCONSIN.

Wisconsin, which ranks twenty-fifth among the states in size (land area 55,256 square miles) and thirteenth in population (2,632,067 in 1920), ranked twenty-ninth in value of mineral products in 1919. The state ranked thirty-first in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross amount received for products by operators of mines and quarries in Wisconsin in 1919 was \$10,580,833, which was an increase of 41.8 per cent over the corresponding amount reported at the census of 1909. Deducting for 1919 a duplication of \$83,802, the value of lead and zinc ores sold by some operators and again reported as product after treatment by others, and for 1909 a similar duplication of \$156,000, leaves as net value of products, \$10,497,031 for 1919 and \$7,303,404 for 1909, an increase of 43.7 per cent. These values include receipts for mineral and other unspecified by-products, custom milling, power sold, and work or miscellaneous services for other enterprises, which amounted to \$96,326 in 1919.

The increase in value of products and the increases in capital, wages, cost of supplies and materials and fuel and power, shown in Table 1, are largely due to general price increases during the census interval and are, therefore, not a measure of growth in mining. The decreases in number of enterprises, number of individual mines and quarries operated, and in the persons engaged in the mining industries are augmented by the temporarily adverse industrial conditions in 1919.

The mining industries reported for Wisconsin in 1919, classified according to principal products and listed in order of value of products, were iron ore, lead and zinc, granite, limestone, sandstone, basalt, silica, and barytes. The industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading mining industry in Wisconsin in 1919 was the production of iron ore in Iron, Florence, Dodge, and Sauk Counties. The six enterprises in this industry employed 32.3 per cent of the total number of wage earners and reported products valued at \$3,826,872, or 36.2 per cent of the total value of products for the state. Wisconsin ranked fifth among the states in the production of iron ore.

The industry second in importance was lead and zinc mining in Grant, Iowa, and Lafayette Counties. Twenty-three enterprises in this industry employed 30.4 per cent of the total number of wage earners and reported products valued at \$3,816,911, or 36.1 per cent of the total value of products for the state.

This amount includes receipts for pyrite recovered as a by-product in the treatment of lead and zinc ores and also receipts for custom milling. Wisconsin ranked sixth in value of output from lead and zinc mines.

Granite quarrying was third in importance among the mineral industries in Wisconsin in 1919, and the state ranked fourth in the granite industry. Fourteen granite-quarrying industries employed 21.2 per cent of the total number of wage earners and reported products valued at \$1,484,979, or 14 per cent of the total value of products.

The character of organizations conducting mining enterprises in Wisconsin in 1919 is brought out by Table 3, which shows that corporations operated 66.3 per cent of the total number of enterprises, employed 94.3 per cent of the total number of wage earners, and reported products valued at \$10,082,080, or 95.3 per cent of the total value of products for the state. The table also shows the preponderance of the corporate form of organization in lead and zinc mining and in the limestone and sandstone-quarrying industries. Similar statistics can not be given for the iron-ore mining industry and the granite-quarrying industry without disclosure of one minor operation in each, conducted by an individual. All other operations in these industries were conducted by corporations.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Wisconsin, 89 per cent had no wage earners or fewer than 101 each and the wage earners employed were only 40.5 per cent of the total number of wage earners. On the other hand, only 10.9 per cent of the total number of enterprises had more than 100 wage earners each and these enterprises employed 59.4 per cent of the total number of wage earners. The larger enterprises were in the iron-ore and lead and zinc-mining and the granite-quarrying industries.

Table 5 shows that in two-thirds of the enterprises employing wage earners and for 54 per cent of the wage earners the hours of labor were 54 to 62 per week. In a third of the enterprises and for 46 per cent of the wage earners the hours were 44 to 53 per week. In the iron-mining industry the 8-hour day and 6-day week prevailed. In the lead and zinc-mining industry the 9-hour day and 6-day week prevailed for most of the wage earners, particularly those employed underground, but enterprises reporting these hours for wage earners employed below ground also reported the 10-hour day and 6-day week for a considerable number

of the wage earners employed in reduction mills and otherwise above ground. In the quarrying industries the 10-hour day and 6-day week prevailed.

The statistics for wage earners presented in Table 6, showing changes in the number employed month by

month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	92	268	-65.7	Capital.....	\$18,681,084	\$11,680,781	59.8
Number of mines and quarries.....	107	286	-62.6	Principal expenses:			
Persons engaged.....	3,890	5,194	-25.1	Salaries.....	618,115	258,472	139.1
Proprietors and firm members, total.....	48	216	-77.8	Wages.....	4,750,235	3,081,360	64.2
Number performing manual labor in or about the mines and quarries.....	19	104	-81.7	Contract work.....	125,268	40,967	230.3
Salaried employees.....	294	268	9.7	Supplies and materials <sup>2</sup> .....	1,909,512	877,925	124.3
Wage earners (average number).....	3,547	4,710	-24.7	Fuel and power.....	867,265	435,903	96.6
Power used (horsepower).....	26,766	24,964	7.6	Royalties and rents.....	535,600	445,146	20.3
				Taxes.....	235,881	62,755	273.9
				Value of products.....	10,580,833	7,480,404	41.8

<sup>1</sup>A minus sign (-) denotes decrease.

<sup>2</sup>Includes cost of ore purchased as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	92	3,547	100.0	\$10,580,833	100.0	Granite.....	14	753	21.2	\$1,484,979	14.0
Iron ore.....	6	1,145	32.3	3,826,872	36.2	Limestone.....	33	382	10.8	1,107,790	10.5
Lead and zinc.....	23	1,078	30.4	3,816,911	36.1	Sandstone.....	12	133	3.7	231,078	2.2
						All other industries.....	4	56	1.6	113,203	1.1

<sup>1</sup>Includes enterprises in industries as follows: Barytes, 1; basalt, 2; silica, 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	92	3,547	\$10,580,833	\$115,000	100.0	100.0	100.0
Corporation.....	61	3,344	10,062,080	165,280	66.3	94.3	95.3
Individual.....	20	133	276,375	13,819	21.7	3.7	2.6
Firm <sup>1</sup> .....	11	70	222,378	20,216	12.0	2.0	2.1
LEAD AND ZINC.....	23	1,078	3,816,911	165,953	100.0	100.0	100.0
Corporation.....	19	1,038	3,676,721	193,512	82.6	96.3	96.3
Firm.....	4	40	140,190	35,045	17.4	3.7	3.7
LIMESTONE.....	33	382	1,107,790	33,569	100.0	100.0	100.0
Corporation.....	15	295	912,637	60,844	45.5	77.2	62.4
Individual.....	13	66	137,545	10,580	39.4	17.3	12.4
Firm <sup>1</sup> .....	5	21	57,588	11,513	15.2	5.5	5.2
SANDSTONE.....	12	133	231,078	19,257	100.0	100.0	100.0
Corporation.....	7	112	197,358	23,194	58.3	84.2	85.4
Individual <sup>2</sup> .....	5	21	33,720	6,744	41.7	15.8	14.6

<sup>1</sup>Includes 1 other form of organization.

<sup>2</sup>Includes 1 firm.

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
ALL INDUSTRIES.....	92	100.0	3,547	100.0	GRANITE.....	14	100.0	753	100.0
No wage earners.....	2	2.2			1 to 5.....	4	28.6	13	1.7
1 to 5.....	27	29.3	61	1.7	6 to 20.....	3	21.4	33	4.2
6 to 20.....	27	29.3	310	8.7	21 to 50.....	1	7.1	22	2.9
21 to 50.....	20	21.7	614	17.3	51 to 100.....	3	21.4	243	32.3
51 to 100.....	6	6.5	454	12.8	101 to 500.....	3	21.4	443	58.8
101 to 500.....	10	10.9	2,108	59.4					
IRON ORE.....	6	100.0	1,145	100.0	LIMESTONE.....	33	100.0	332	100.0
21 to 50.....	1	16.7	40	3.5	1 to 5.....	15	45.5	29	7.6
51 to 100.....	1	16.7	51	4.5	6 to 20.....	11	33.3	120	31.4
101 to 500.....	4	66.7	1,054	92.1	21 to 50.....	6	18.2	168	44.0
					51 to 100.....	1	3.0	65	17.0
LEAD AND ZINC.....	23	100.0	1,078	100.0	SANDSTONE.....	12	100.0	133	100.0
No wage earners.....	2	8.7			1 to 5.....	4	33.3	7	5.3
1 to 5.....	3	13.0	11	1.0	6 to 20.....	7	58.3	91	68.4
6 to 20.....	4	17.4	41	3.8	21 to 50.....	1	8.3	35	26.3
21 to 50.....	10	43.5	320	29.7					
51 to 100.....	1	4.3	95	8.8					
101 to 500.....	3	13.0	611	56.7					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—				INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—			
	Enterprises.	Wage earners.	44 to 53.		54 to 62.			Enterprises.	Wage earners.	44 to 53.		54 to 62.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.				Enterprises.	Wage earners.	Enterprises.	Wage earners.
All industries.....	190	3,547	30	1,630	60	1,917	Granite.....	14	753	8	317	6	436
Iron ore.....	6	1,145	6	1,145			Limestone.....	33	332	5	40	28	342
Lead and zinc.....	21	1,078	7	86	14	992	Sandstone.....	12	133	2	24	10	109
							All other.....	4	56	2	18	2	38

<sup>1</sup> Exclusive of 2 enterprises employing no wage earners in the lead and zinc industry.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
All industries.....	3,652	3,519	3,426	3,511	3,744	<b>3,857</b>	3,812	3,843	3,844	3,719	3,708	3,593	<i>3,248</i>	84.2
Producing enterprises.....	3,547	3,461	3,368	3,452	3,636	<b>3,720</b>	3,676	3,712	3,717	3,604	3,606	3,479	<i>3,153</i>	84.2
Iron ore.....	1,145	1,206	<b>1,243</b>	1,211	1,179	1,173	1,131	1,115	1,099	<i>1,047</i>	1,108	1,106	1,118	84.9
Lead and zinc.....	1,078	1,413	1,224	1,237	1,118	1,078	986	987	1,040	976	970	980	<i>917</i>	64.9
Granite.....	753	585	608	622	767	778	833	849	821	880	854	809	652	67.8
Limestone.....	332	178	187	232	409	487	509	517	501	477	444	377	266	24.4
Sandstone.....	133	60	72	121	131	144	158	168	181	168	151	131	111	33.1
All other industries.....	56	<i>31</i>	25	29	32	55	59	76	75	76	79	76	69	26.6
Nonproducing enterprises.....	105	58	58	59	108	137	136	131	127	115	102	114	115	42.8



TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.							Nonproducing enterprises. <sup>3</sup>
		Total.	Iron ore.	Lead and zinc. <sup>1</sup>	Granite.	Limestone.	Sandstone.	All other. <sup>2</sup>	
Number of enterprises.....	96	92	6	23	14	33	12	4	4
Number of mines and quarries.....	111	107	8	34	16	33	12	4	4
Capital.....	\$19,375,112	\$18,631,034	\$5,963,604	\$7,824,755	\$1,790,740	\$2,200,160	\$341,560	\$450,215	\$744,078
Principal expenses:									
Salaries and wages—									
Officers.....	\$148,631	\$148,651	\$7,640	\$25,266	\$67,427	\$42,375	\$5,643	.....	\$280
Superintendents and managers.....	\$272,847	\$259,247	\$3,512	\$109,061	\$37,453	\$34,339	\$12,072	\$8,800	\$16,600
Technical employees.....	\$59,451	\$57,609	\$21,420	\$34,224	\$1,355	.....	.....	.....	\$1,572
Clerks, etc.....	\$158,608	\$155,908	\$38,602	\$90,105	\$30,759	\$26,963	\$3,629	\$1,950	\$2,700
Wage earners.....	\$4,892,745	\$4,750,235	\$1,572,621	\$1,530,349	\$759,599	\$533,199	\$133,602	\$60,875	\$142,510
Supplies and materials.....	\$1,014,067	\$1,885,710	\$496,012	\$630,990	\$208,146	\$158,011	\$51,923	\$40,628	\$23,357
Cost of ore purchased as material.....	\$33,802	\$33,802	.....	\$33,802	.....	.....	.....	.....	.....
Fuel.....	\$393,853	\$399,187	\$155,626	\$31,145	\$37,817	\$70,439	\$9,599	\$4,563	\$54,666
Power.....	\$548,078	\$548,078	\$90,133	\$405,539	\$23,748	\$48,920	\$1,010	\$8,403	.....
Royalties and rents.....	\$543,600	\$535,600	\$277,315	\$233,798	\$5,067	\$10,897	\$5,008	\$20	\$8,000
Taxes.....	\$236,005	\$233,851	\$144,568	\$41,776	\$22,101	\$21,064	\$3,775	\$1,567	\$3,124
Contract work.....	\$252,171	\$135,293	\$31,963	\$90,027	.....	\$6,263	\$1,050	.....	\$116,873
Expenditures for development (included in the above items).....	\$1,009,707	\$650,622	\$464,154	\$149,892	\$6,892	\$23,614	\$8,070	.....	\$359,085
Value of products.....	\$10,580,833	\$10,580,833	\$3,826,372	\$3,816,911	\$1,484,979	\$1,107,790	\$231,078	\$113,203	.....
Persons engaged in industry.....	4,008	3,889	1,194	1,214	798	462	154	67	119
Proprietors and firm members (total).....	54	48	1	14	1	23	6	3	6
Number performing manual labor.....	19	19	.....	13	1	5	.....	.....	.....
Salaries officers.....	38	38	1	10	10	15	2	.....	.....
Superintendents and managers.....	109	105	11	50	14	18	7	5	4
Technical employees.....	27	24	9	13	1	.....	.....	.....	3
Clerks, etc.....	128	127	27	49	19	23	6	5	1
Wage earners (average number).....	3,652	3,547	1,145	1,078	758	332	133	36	105
Wage earners by occupation (Dec. 15):									
Above ground (total).....	4,293	4,228	258	484	772	477	169	68	65
Below ground (total).....	1,689	1,627	964	663	.....	.....	.....	.....	62
Foremen, shift bosses, etc.—									
Above ground.....	70	70	12	10	21	19	4	4	5
Below ground.....	70	65	35	30	.....	.....	.....	.....	.....
Enginemen, holstmen, electricians, mechanics, etc.—									
Above ground.....	376	261	88	146	58	42	9	18	15
Below ground.....	84	79	73	6	.....	.....	.....	.....	5
Miners, quarrymen, and drillmen, including their helpers—									
Above ground.....	643	627	20	13	304	174	94	17	16
Below ground.....	334	782	585	197	.....	.....	.....	.....	52
Timberman, trackmen, and men engaged in hauling, tramming, etc.—									
Above ground.....	91	74	20	3	39	12	.....	.....	17
Below ground.....	335	335	172	163	.....	.....	.....	.....	.....
Muckers, loaders, laborers, and others not classified—									
Above ground.....	655	638	116	104	130	219	46	23	17
Below ground.....	366	366	99	267	.....	.....	.....	.....	.....
Wage earners employed in mills and beneficiating plants—									
Above ground.....	458	458	2	203	220	11	16	6	.....
Number of females included in wage earners reported above—									
Above ground.....	10	10	.....	10	.....	.....	.....	.....	.....
Mineral land operated..... acres.....	12,869	12,064	2,700	6,291	712	1,348	493	520	305
Land controlled, total..... acres.....	19,975	19,050	2,789	12,333	1,260	1,580	568	520	926
Mineral land owned.....	6,978	6,938	1,940	2,381	565	1,322	220	510	40
Mineral land leased.....	5,991	5,126	769	3,910	147	26	273	10	765
Timber and other lands owned and leased.....	7,106	6,986	89	6,042	548	232	75	.....	120
Power used: Aggregate horsepower.....	28,246	26,766	6,732	9,758	2,850	5,772	1,009	645	1,480
Prime movers (horsepower, total).....	9,184	7,704	2,885	88	1,175	2,472	909	175	1,480
Steam engines—									
Number.....	104	97	19	2	26	34	10	6	7
Horsepower.....	8,306	6,971	2,780	30	1,175	2,149	692	165	1,335
Internal-combustion engines—									
Number.....	21	16	.....	3	.....	8	4	1	5
Horsepower.....	603	456	.....	58	.....	173	217	10	145
Water wheels and turbines—									
Number.....	6	6	4	.....	.....	2	.....	.....	.....
Horsepower.....	275	275	125	.....	.....	150	.....	.....	.....
Purchased power (horsepower, total).....	19,062	19,062	3,847	9,670	1,675	3,300	100	470	.....
Electric motors operated by purchased current—									
Number.....	500	500	45	384	38	73	1	14	.....
Horsepower.....	19,062	19,062	3,847	9,670	1,675	3,300	100	470	.....
Electric motors run by current generated by enterprise using:									
Number.....	16	14	6	.....	4	4	.....	.....	2
Horsepower.....	1,480	1,080	385	.....	560	145	.....	.....	400
Fuel used:									
Coal, anthracite..... tons, 2,240 pounds.....	15	15	.....	.....	15	.....	.....	.....	.....
Coal, bituminous..... tons, 2,000 pounds.....	50,518	50,600	26,154	5,050	5,334	12,066	1,196	800	8,918
Coke..... tons, 2,000 pounds.....	99	99	.....	.....	.....	.....	.....	.....	.....
Wood..... cords.....	2,128	1,778	.....	42	1,534	202	.....	.....	360
Fuel oils..... barrels.....	1,950	1,402	283	1,402	.....	100	160	.....	.....
Gasoline and other volatile oils..... barrels.....	1,031	929	98	190	1	468	72	100	102

<sup>1</sup> Includes 1 reduction mill operated independently of mines.  
<sup>2</sup> Includes enterprises as follows: Barytes, 1; basalt, 2; silica, 1.

<sup>3</sup> Includes enterprises as follows: Iron ore, 2; lead and zinc, 2.  
<sup>4</sup> Includes 1 wage earner under 16 years of age.

## WYOMING.

Wyoming, which ranks eighth among the states in size (land area 97,548 square miles) and forty-eighth in population (194,402 in 1920), ranked seventeenth in value of mineral products in 1919. The state ranked twenty-second in the total number of persons engaged in the mining industries and in the average number of wage earners employed.

The gross value of mineral products of Wyoming in 1919 was \$41,928,788, which was an increase of 296.6 per cent over the value reported at the census of 1909. This amount includes a duplication of \$74,281, the value of natural gas sold by some producers to others who used it as material or resold it and included it in the products reported by them. The value of products also includes in addition to the value of principal mineral products a small amount received for mineral by-products and for power or miscellaneous services furnished to other enterprises.

The increases in value of products, capital, salaries, wages, cost of supplies and materials and fuel and power, shown in Table 1, are not wholly a measure of growth of mining in Wyoming as they were augmented in large part by general price increases during the census interval. The increases in number of enterprises, number of wells operated, and average number of wage earners employed are a better measure of the progress of the mining industries.

The mining industries reported in Wyoming for 1919, classified according to principal products and listed in order of value of products, were petroleum and natural gas, coal, iron ore, gypsum, limestone, ores of rare metals (uranium), chromite, sandstone, asbestos, and clay. The mineral industries for which statistics can be shown without disclosure of individual operations are ranked by value of products in Table 2.

The leading industry in Wyoming was the production of petroleum and natural gas in which 39 out of a total of 106 enterprises in the state were engaged. The industry employed 22.3 per cent of the total number of wage earners and reported products valued at \$21,959,937, which was 52.4 per cent of the total value of products of the state. In this industry Wyoming ranked eleventh in the United States. Productive operations were distributed over the state in 13 counties, but the most important were in Salt Creek Field in Natrona County, Big Muddy Field in

Converse County, Grass Creek Field in Hot Springs County, and Elk Basin Field in Park County.

The industry second in importance in Wyoming in 1919 was the mining of bituminous coal, in which 46 enterprises were engaged. They employed 73.1 per cent of the total number of wage earners and reported products valued at \$18,723,451, which was 44.7 per cent of the total value of products of the state. In this industry Wyoming ranked tenth in the United States. The producing mines were in 12 counties, of which Sweetwater, Sheridan, and Lincoln were most productive.

The form of organizations conducting mining enterprises in the state of Wyoming in 1919 is shown in Table 3, which brings out the preponderance of corporations over other forms of organization. Corporations conducted 86.8 per cent of the total number of enterprises, employed 99.3 per cent of the total number of wage earners, and reported 99.6 per cent of the total value of products.

The relatively large number of small enterprises, as measured by the average number of wage earners employed, is shown in Table 4. Of the total number of mining enterprises in Wyoming, 4 employed no wage earners and 74, or 69.8 per cent, had fewer than 101 wage earners each and employed only 14.8 per cent of the total number of wage earners. On the other hand, 26.4 per cent of the total number of enterprises had more than 100 wage earners each, and these enterprises employed 85.2 per cent of the total number of wage earners. The larger enterprises were in the coal-mining, petroleum and natural-gas, and iron-ore-mining industries.

Table 5 shows that in a majority of the enterprises and for 77.1 per cent of the total number of wage earners the hours of labor were 44 to 53 per week. A considerable number of other enterprises reported 54 to 62 hours per week. In the coal-mining industry the 8-hour day and 6-day week prevailed, while in the petroleum and natural-gas industry longer hours were the rule.

The statistics for wage earners presented in Table 6, showing the changes in the number employed month by month, reflect conditions prevailing in the industries during the census year.

Table 7 presents for 1919 statistics in detail for the state as a whole and for each industry that can be shown without the disclosure of individual operations.

## MINES AND QUARRIES—WYOMING.

TABLE 1.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.

	MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>		MINING INDUSTRIES.		Per cent of increase. <sup>1</sup>
	1919	1909			1919	1909	
Number of enterprises.....	106	66		Capital.....	\$101,774,878	\$9,505,865	970.7
Number of mines and quarries.....	87	95		Principal expenses:			
Number of petroleum and natural-gas wells.....	1,064	21		Salaries.....	1,386,929	447,407	210.0
Number of natural-gas gasoline plants.....	5			Wages.....	14,576,415	6,266,787	132.6
Persons engaged.....	10,278	8,226	24.9	Contract work.....	715,980	61,542	1,053.4
Proprietors and firm members, total.....	19	202	-90.6	Supplies and materials.....	\$ 6,422,789	1,335,594	369.5
Number performing manual labor in or about the mines, quarries, and wells.....	7	13		Fuel and power.....	1,072,787	376,187	185.2
Salaried employees.....	555	282	96.8	Royalties and rents.....	1,785,597	107,824	1,587.3
Wage earners (average number).....	9,699	7,742	25.3	Taxes.....	1,096,872	61,409	8,180.9
Power used (horsepower).....	62,757	30,338	106.9	Value of products.....	41,928,788	10,572,188	296.6

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.  
<sup>2</sup> Includes cost of natural gas purchased for use as material.

TABLE 2.—PRINCIPAL INDUSTRIES, PRODUCING ENTERPRISES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.		INDUSTRY.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.			Average number.	Per cent distribution.	Amount.	Per cent distribution.
All industries.....	106	9,699	100.0	\$41,928,788	100.0	Coal, bituminous.....	46	7,091	73.1	\$18,723,451	44.7
Petroleum and natural gas.....	39	2,167	22.3	21,959,937	52.4	All other industries <sup>1</sup> .....	21	441	4.5	1,245,400	3.0

<sup>1</sup> Includes enterprises in industries as follows: Asbestos, 2; chromite, 1; clay, 1; gypsum, 4; iron ore, 1; limestone, 8; sandstone, 3; rare metals (uranium), 1.

TABLE 3.—CHARACTER OF ORGANIZATION, FOR SELECTED INDUSTRIES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Number of wage earners.	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners.	Value of products.
ALL INDUSTRIES.....	106	9,699	\$41,928,788	\$365,555	100.0	100.0	100.0
Corporation.....	92	9,633	41,753,351	453,841	86.3	98.3	99.6
Individual.....	10	37	123,648	12,365	9.4	0.4	0.3
Firm.....	4	29	51,789	12,947	3.3	0.3	0.1
PETROLEUM AND NATURAL GAS.....	39	2,167	21,959,937	563,075	100.0	100.0	100.0
Corporation.....	39	2,167	21,959,937	563,075	100.0	100.0	100.0
COAL, BITUMINOUS.....	46	7,091	18,723,451	407,032	100.0	100.0	100.0
Corporation.....	37	7,052	18,641,184	503,816	80.4	99.4	99.6
Individual.....	5	10	30,478	6,096	10.9	0.1	0.2
Firm.....	4	29	51,789	12,947	8.7	0.4	0.3

TABLE 4.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		INDUSTRY AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.	Number.	Per cent distribution.
<b>ALL INDUSTRIES.....</b>	<b>106</b>	<b>100.0</b>	<b>9,699</b>	<b>100.0</b>	<b>PETROLEUM AND NATURAL GAS...</b>	<b>39</b>	<b>100.0</b>	<b>2,167</b>	<b>100.0</b>
No wage earners.....	4	3.8	.....	.....	No wage earners.....	2	5.1	.....	.....
1 to 5.....	28	26.4	63	0.6	1 to 5.....	13	33.3	32	1.5
6 to 20.....	25	23.6	256	2.6	6 to 20.....	11	28.2	82	4.2
21 to 50.....	10	9.4	348	3.6	21 to 50.....	4	10.3	146	6.7
51 to 100.....	11	10.4	774	8.0	51 to 100.....	5	12.8	350	16.2
101 to 500.....	25	23.6	6,184	63.8	101 to 500.....	3	7.7	760	35.1
501 to 1,000.....	3	2.8	2,074	21.4	501 to 1,000.....	1	2.6	787	36.3
<b>COAL, BITUMINOUS.....</b>	<b>46</b>	<b>106.0</b>	<b>7,091</b>	<b>100.0</b>					
1 to 5.....	9	19.6	22	0.3					
6 to 20.....	6	13.0	72	1.0					
21 to 50.....	3	6.5	111	1.6					
51 to 100.....	5	10.9	372	5.2					
101 to 500.....	21	45.7	5,227	73.7					
501 to 1,000.....	2	4.3	1,287	18.1					

TABLE 5.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED INDUSTRIES: 1919.

INDUSTRY.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enterprises.	Wage earners.	36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
<b>All industries.....</b>	<b>1102</b>	<b>9,699</b>	<b>3</b>	<b>19</b>	<b>56</b>	<b>7,481</b>	<b>23</b>	<b>1,892</b>	<b>10</b>	<b>239</b>	<b>10</b>	<b>68</b>
Coal, bituminous.....	46	7,091	1	16	44	7,033	1	42	.....	.....	.....	.....
Petroleum and natural gas.....	37	2,167	.....	.....	7	221	14	1,683	7	204	9	89
All other industries.....	19	441	2	3	5	227	8	167	3	35	1	9

<sup>1</sup> Exclusive of 4 enterprises employing no wage earners in industries as follows: Petroleum and natural gas, 2; limestone, 2.

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED INDUSTRIES: 1919.

[The month of maximum employment for each industry is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>All industries.....</b>	<b>9,781</b>	<b>10,978</b>	10,448	10,245	9,629	9,234	9,060	9,051	9,594	9,810	9,872	9,101	10,350	82.4
Producing enterprises.....	9,699	<b>10,929</b>	10,407	10,188	9,565	9,123	8,949	8,948	9,478	9,723	9,788	9,016	10,272	81.7
Coal, bituminous.....	7,091	<b>8,445</b>	7,985	7,621	6,972	6,358	6,177	6,186	6,688	6,989	7,339	6,570	7,819	72.4
Petroleum and natural gas.....	2,167	<b>2,062</b>	<i>1,969</i>	2,087	2,048	2,201	<b>2,308</b>	2,195	2,248	<b>2,258</b>	2,210	2,212	2,243	85.0
All other industries.....	441	<b>432</b>	460	480	545	564	526	561	540	501	239	234	110	37.2
Nonproducing enterprises.....	82	39	41	57	64	111	111	109	118	87	84	85	78	33.1
Petroleum and natural gas.....	67	<i>25</i>	28	41	49	95	95	93	104	75	69	68	62	24.0
All other industries.....	15	14	13	16	15	16	16	16	14	12	15	17	16	70.6

TABLE 7.—DETAILED STATISTICS FOR MINING INDUSTRIES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.			NONPRODUCING ENTERPRISES.			
		Total.	Petroleum and natural gas.	Coal, bituminous.	All other. <sup>1</sup>	Total.	Petroleum and natural gas.	All other. <sup>2</sup>
Number of enterprises.....	121	106	39	46	21	15	11	4
Number of mines and quarries.....	91	87	.....	65	22	4	.....	4
Number of petroleum and natural-gas wells.....	1,084	1,084	1,084	.....	.....	.....	.....	.....
Number of natural-gas gasoline plants.....	5	5	5	.....	.....	.....	.....	.....
Capital.....	\$104,429,923	\$101,774,873	\$65,620,743	\$33,876,607	\$2,277,523	\$2,655,050	\$2,427,130	\$227,920
Principal expenses:								
Salaries and wages—								
Officers.....	\$446,223	\$435,119	\$131,979	\$287,459	\$15,681	\$11,104	\$9,304	\$1,800
Superintendents and managers.....	\$424,849	\$402,022	\$145,906	\$226,776	\$29,451	\$22,817	\$13,661	\$9,156
Technical employees.....	\$143,006	\$110,013	\$25,842	\$77,316	\$6,855	\$32,993	\$25,878	\$7,115
Clerks, etc.....	\$447,257	\$439,705	\$127,071	\$288,487	\$24,207	\$7,492	\$7,492	.....
Wage earners.....	\$14,710,289	\$14,576,415	\$3,486,735	\$10,545,034	\$544,646	\$123,854	\$114,513	\$19,341
Supplies and materials.....	\$6,789,622	\$6,348,488	\$3,757,754	\$2,287,971	\$302,763	\$441,134	\$434,058	\$7,076
Cost of natural gas purchased for use as material or for resale.....	\$74,281	\$74,281	\$74,281	.....	.....	.....	.....	.....
Fuel.....	\$805,132	\$762,272	\$275,094	\$393,788	\$95,390	\$42,860	\$40,009	\$2,851
Power.....	\$310,515	\$310,515	.....	\$310,515	.....	.....	.....	.....
Royalties and rents.....	\$1,783,796	\$1,765,597	\$1,497,106	\$239,261	\$29,290	\$18,199	\$15,699	\$2,500
Taxes.....	\$1,999,502	\$1,996,372	\$1,158,221	\$808,211	\$31,940	\$3,130	\$2,849	\$281
Contract work.....	\$820,608	\$715,960	\$676,625	\$1,232	\$38,103	\$104,643	\$63,643	\$11,000
Expenditures for development (included in the above items).....	\$6,843,057	\$6,060,835	\$5,722,038	\$318,297	\$20,500	\$782,222	\$724,203	\$58,019
Value of products.....	\$41,928,788	\$41,928,788	\$21,969,937	\$18,723,451	\$1,245,400	.....	.....	.....
Persons engaged in industry.....	10,399	10,273	2,358	7,427	488	126	103	23
Proprietors and firm members (total).....	19	19	.....	14	5	.....	.....	.....
Number performing manual labor.....	7	7	.....	6	1	.....	.....	.....
Salaried officers.....	94	87	32	50	5	7	6	1
Superintendents and managers.....	156	145	53	77	15	11	7	4
Technical employees.....	58	39	7	28	4	19	16	3
Clerks, etc.....	291	284	99	167	18	7	7	.....
Wage earners (average number).....	9,781	9,699	2,167	7,091	441	82	67	15
Wage earners by occupation (Dec. 15):								
Above ground (total).....	4,060	3,948	2,262	1,307	379	112	106	6
Below ground (total).....	6,618	6,608	.....	6,488	120	10	.....	10
Foremen, shift bosses, etc.—								
Above ground.....	72	71	.....	52	19	1	.....	1
Below ground.....	101	101	.....	91	10	.....	.....	.....
Enginemen, hoistmen, electricians, mechanics, etc.—								
Above ground.....	2,439	2,375	1,949	372	54	64	62	2
Below ground.....	297	297	.....	286	11	.....	.....	.....
Miners, quarrymen, and drillmen, including their helpers—								
Above ground.....	160	159	.....	89	70	1	.....	1
Below ground.....	3,277	3,299	.....	3,253	16	8	.....	8
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—								
Above ground.....	212	212	.....	182	30	.....	.....	.....
Below ground.....	1,066	1,065	.....	1,035	30	1	.....	1
Muckers, loaders, laborers, and others not classified—								
Above ground.....	1,123	1,077	313	612	152	46	44	2
Below ground.....	1,877	1,876	.....	1,823	53	1	.....	1
Wage earners employed in mills and beneficiating plants—								
Above ground.....	54	54	.....	.....	54	.....	.....	.....
Number of females included in wage earners reported above—								
Above ground.....	65	62	62	.....	.....	3	3	.....
Number of wage earners under 16 years of age included in those reported above—								
Above ground.....	2	2	.....	2	.....	.....	.....	.....
Mineral and oil land operated..... acres.....	272,101	264,695	199,842	57,562	7,591	7,406	6,076	1,330
Land controlled, total..... acres.....	275,383	267,977	199,542	60,842	7,593	7,408	6,076	1,330
Mineral and oil land owned.....	59,184	58,584	8,210	44,526	5,848	600	.....	600
Mineral and oil land leased.....	212,919	206,113	191,332	13,036	1,745	6,806	6,076	730
Timber and other land owned and leased.....	3,280	3,280	.....	3,280	.....	.....	.....	.....
Power used: Aggregate horsepower.....	63,478	62,757	12,893	47,075	2,789	721	629	92
Prime movers (horsepower, total).....	49,538	48,817	12,893	33,135	2,789	721	629	92
Steam engines—								
Number.....	335	317	212	88	17	18	16	2
Horsepower.....	23,537	22,916	5,531	14,850	2,535	621	561	60
Steam turbines—								
Number.....	16	16	.....	16	.....	.....	.....	.....
Horsepower.....	18,240	18,240	.....	18,240	.....	.....	.....	.....
Internal-combustion engines—								
Number.....	244	238	228	2	8	6	5	1
Horsepower.....	7,761	7,661	7,362	45	254	100	68	32
Purchased power (horsepower, total).....	13,940	13,940	.....	13,940	.....	.....	.....	.....
Electric motors operated by purchased current—								
Number.....	355	355	.....	355	.....	.....	.....	.....
Horsepower.....	13,940	13,940	.....	13,940	.....	.....	.....	.....
Electric motors run by current generated by enterprise using:								
Number.....	108	108	1	92	15	.....	.....	.....
Horsepower.....	4,474	4,474	75	3,996	433	.....	.....	.....
Fuel used:								
Coal, bituminous..... tons, 2,000 pounds.....	242,605	241,089	1,892	223,042	16,155	1,516	1,326	190
Coke..... tons, 2,000 pounds.....	14	14	.....	.....	.....	.....	.....	.....
Wood..... cords.....	360	6	.....	.....	6	354	.....	354
Fuel oils..... barrels.....	131,736	119,210	119,210	.....	.....	12,526	12,526	.....
Gasoline and other volatile oils..... barrels.....	926	802	151	91	590	124	.....	124
Natural gas..... 1,000 cubic feet.....	1,824,124	1,743,724	1,743,724	.....	.....	80,400	80,400	.....

<sup>1</sup> Includes enterprises as follows: Asbestos, 2; chromite, 1; clay, 1; gypsum, 4; iron ore, 1; limestone, 8; sandstone, 3; rare metals (uranium), 1.

<sup>2</sup> Includes enterprises as follows: Gold, silver, or copper, lode mines, 3; sulphur, 1.

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**REPORTS FOR SELECTED INDUSTRIES**

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# COAL.

## INTRODUCTION.

**Scope of the report.**—This report presents the results of the census of mines and quarries for the year 1919 relating to the coal-mining industry comprising the production of coal of all kinds—anthracite, bituminous coal, lignite, and other varieties. It includes statistics showing: The geographic distribution of the industry by coal-mining provinces or regions and states; the progress of the industry by comparison of results of the 1919 census with those of the three preceding censuses of mines and quarries; the character of organization, and the size of operating enterprises; the persons engaged in the industry; the acreage of land controlled and the form of tenure of coal land; power equipment and fuel used; methods of operation; and statistics in detail for the United States as a whole, for the coal-mining provinces or regions, and for each state within the provinces or regions that can be shown without disclosure of individual operations.

This report on the coal-mining industry does not include statistics relating to the operation of mines by governmental and other noncommercial institutions. Returns were received from 9 such enterprises, 1 each in Indiana, New Mexico, North Dakota, and Tennessee, 2 in Virginia, and 3 in Pennsylvania which operated 9 mines, engaged the services of 145 persons of whom 135 were wage earners, and which produced approximately 175,000 short tons of bituminous coal valued at \$469,745.

The canvass of coal-mining enterprises did not include small bituminous coal mines or banks producing less than 1,000 tons annually, and the statistics herein presented are exclusive of data for such enterprises. The United States Geological Survey reported for 1919, 3,415 noncommercial small mines whose production was less than 1,000 tons and aggregated 928,635 tons valued at \$2,429,141. As this count is admittedly incomplete and, furthermore, as the Geological Survey has included in its tabulation of commercial coal mines a number of mines which produced less than 1,000 tons in 1919 the full count of small mines productive in that year was probably in excess of 3,500 mines and their product more than 1,000,000 tons of coal.

This report contains statistics relating to unproductive operations conducted solely for development of coal properties as well as statistics relating to productive operations. The nonproducing operations reported include one Pennsylvania anthracite enterprise for which statistics can not be shown separately and have therefore been included with those for bituminous coal-mining enterprises.

**Relation to the census of manufactures.**—Two classes of enterprises were engaged in bituminous coal-mining operations intimately connected with manufacturing. These were (1) manufacturers of coke and (2) manufacturers of clay products who mined the coal used in their manufacturing plants. Completely segregated returns were secured for the mining and the coke manufacturing operations, or, when producers made combined reports, they were apportioned so that mining and manufacturing statistics could be separately tabulated except in the case of a few establishments whose coke-producing operations were quite subordinate to coal mining and whose entire reports were therefore accepted as coal-mining reports. A few manufacturers of clay products who mined coal in connection with clay and used both mineral products in their manufacturing plants, located at the mines, did not furnish separate data on coal mining, and statistics for such establishments are not included in the statistics of mines and quarries. The coal so produced amounted to less than 100,000 tons and was probably in the neighborhood of 50,000 tons. There is therefore no duplication in the census statistics relating to coal mining of statistics reported by the census of manufactures for the year 1919.

**Differences between the census of mines and quarries, 1919, and the preceding censuses.**—The scope of the inquiries and the form of presentation of statistics relating to coal mining were essentially similar at the Fourteenth and Thirteenth Censuses, except in two important respects, which are: (1) That the Fourteenth Census relating to the year 1919 thoroughly segregated coal-mining operations from coke-manufacturing operations, whereas the Thirteenth Census relating to the year 1909 included statistics relating to coke-manufacturing operations conducted at the mines by coal producers. In the reports of the Thirteenth Census there are, however, also presented statistics from which the data relating to coke manufacture at the mines were excluded, partly by estimate. (2) The Fourteenth Census did not count the operators but reported the number of enterprises which is essentially a count of the operations for which the operators kept separate records and for which they submitted separate returns. The Thirteenth Census presented the number of operators by eliminating duplications in the count for such operators as reported more than one enterprise in the state. The number of enterprises, comparable with the count for 1919, was, however, given in the report of the Thirteenth Census in a special statement. Entirely comparable statistics for the years 1919 and 1909 can therefore be presented.



The special census of Mines and Quarries for the year 1902 and the earlier censuses relating to coal mining were different from the later censuses in both the form and scope of the inquiries and method of presentation of results. Therefore, only partly comparable statistics are available for selected items.

**Use of long and short tons.**—In all the tables in which the quantities of bituminous coal only or of both anthracite and bituminous coal are given the unit of measure used is the ton of 2,000 pounds, but in all the tables which deal with Pennsylvania anthracite only the long ton of 2,240 pounds is used.

**Differences in the results presented by the Bureau of the Census and the Geological Survey.**—The statistics on coal mining were collected in cooperation with the United States Geological Survey. For the purpose of the cooperative canvass supplemental schedules were provided in addition to the general schedule of the census. These supplemental schedules requested special information such as the quantity of coal according to the disposition made of it, the time in operation, the number of employees, the character of openings, method of mining, the kind of mining machine used, and other special data. This information was tabulated by the United States Geological Survey. It has been used by the Bureau of the Census in completing or correcting defective general schedules and for classifying the coal-mining enterprises according to method of operation and disposition of products. The schedules were independently prepared for tabulation by the Bureau of the Census and the Geological Survey, and therefore slight differences in results developed. The results would, however, be essentially identical except for the fact that the Geological Survey supplemented the returns of the canvass by the inclusion of belated returns or estimates for enterprises from which the general census statistics were not obtained and also included in its published statistics the production of small mines, governmental institutions, and manufacturing plants not classified as mines by the Bureau of the Census.

Therefore the quantity of coal produced and the total value of products of the coal-mining industry as reported by the Bureau of the Census, and the quantity and value of coal produced as reported by the Geological Survey are different for each of the principal states. As shown in the following statement, the total quantity and value credited to the United States Geological Survey are larger than the figures of the Bureau of the Census, and for most of the states there is a small excess in the Geological Survey figures.

The Geological Survey's statistics on men employed, "underground," and "surface," are in approximate accord with the Bureau of the Census statistics on wage earners below ground and above ground. The Geological Survey's figures are, however, based on estimated averages made by the reporting operator, whereas the Bureau of the Census average number is

the average of the numbers reported on a representative day of each month, and the numbers given by that bureau as employed above ground and below ground are the numbers reported by the operators for December 15 or nearest representative day.

STATE.	BUREAU OF THE CENSUS.		GEOLOGICAL SURVEY.	
	Coal produced (tons, 2,000 pounds).	Total value of products of the industry.	Coal produced.	
			Quantity (tons, 2,000 pounds).	Value.
United States <sup>1</sup> .....	548,595,000	\$1,510,061,707	553,861,000	\$1,525,199,416
Anthracite (Pennsylvania).....	88,170,000	364,084,142	88,092,000	364,926,950
Bituminous coal.....	460,425,000	1,145,977,565	465,769,000	1,160,272,466
Alabama.....	15,411,000	45,359,441	15,537,000	45,937,681
Arkansas.....	1,440,000	5,292,274	1,429,000	5,298,844
Colorado.....	10,183,000	28,342,195	10,323,000	28,745,534
Illinois.....	60,331,000	138,767,835	60,865,000	140,075,969
Indiana.....	20,505,000	45,492,726	20,912,000	46,345,750
Iowa.....	5,474,000	16,903,358	5,635,000	17,352,680
Kansas.....	5,204,000	15,748,535	5,225,000	15,917,053
Kentucky.....	29,429,000	72,432,840	30,036,000	78,891,049
Maryland.....	2,997,000	8,195,067	3,022,000	8,255,984
Michigan.....	966,000	3,861,874	966,000	3,864,228
Missouri.....	3,784,000	12,077,845	3,980,000	12,766,366
Montana.....	3,212,000	8,591,311	3,285,000	8,644,344
New Mexico.....	3,185,000	9,905,541	3,139,000	9,750,532
North Dakota.....	3,768,000	1,927,904	841,000	2,100,308
Ohio.....	35,141,000	77,988,022	35,877,000	79,498,301
Oklahoma.....	3,783,000	14,477,317	3,802,000	14,544,903
Pennsylvania.....	150,030,000	362,973,422	150,758,000	365,430,504
Tennessee.....	5,132,000	14,024,422	5,213,000	14,448,168
Texas.....	1,588,000	4,322,100	1,631,000	4,527,640
Utah.....	4,593,000	12,632,085	4,681,000	12,760,412
Virginia.....	9,335,000	23,763,440	9,327,000	23,774,941
Washington.....	2,987,000	10,737,656	2,990,000	10,691,222
West Virginia.....	77,617,000	193,108,343	79,036,000	198,551,015
Wyoming.....	7,212,000	18,723,451	7,220,000	18,751,094
All other states <sup>2</sup> .....	92,000	327,361	100,000	358,579

<sup>1</sup> Exclusive of Alaska.

<sup>2</sup> Includes California, Georgia, Idaho, North Carolina, Oregon, and South Dakota.

The Bureau of the Census does not report the tonnage of coal mined by various methods, and its figures are therefore not in conflict with statements made by the Geological Survey. The Bureau of the Census has classified bituminous coal-mining enterprises only on the basis of use of mining machines. Enterprises classified as using them may nevertheless have produced the major part of their coal output by hand mining.

**Varieties of coal.**—Three principal kinds of coal are commonly recognized, namely, (1) anthracite, (2) bituminous coal, and (3) lignite. A number of other names are used to designate varieties of coal that are intermediate between, or subordinate to, these. Some of these names indicate "rank;" that is, the differences in coal that are due to the progressive change from lignite to anthracite, and other names designate coals in accordance with peculiar characters aside from their rank. Within the boundaries of the United States there are all ranks of coal from the coarse, woody lignite of North Dakota and eastern Montana through subbituminous coals, bituminous coals, semibituminous coals, and semianthracites to the highest rank of anthracite in fields of eastern Pennsylvania; and there are many varieties such as cannel, splint, and block coals. For purposes of statistical presentation in this report coal-mining enterprises are not classified according to the character

or variety of the coal produced. All the coal-mining enterprises in 1919, except those in the Pennsylvania anthracite region, are designated bituminous-coal-mining enterprises, and statistics relating to them are presented as for bituminous-coal mines. The statistics in this report presented for anthracite mines relate entirely to the anthracite region in eastern Pennsylvania. This comparatively small area produces practically all the anthracite mined in the United States, although there is a little commercial production of anthracite in Gunnison County, Colorado, and Santa Fe County, New Mexico, and although anthracite occurs in a number of other fields in the western

states. The so-called anthracites of other states, particularly Virginia, West Virginia, and Arkansas, are very high rank bituminous coals or semianthracite.

PRINCIPAL STATISTICS.

Summary for producing and nonproducing enterprises: 1919.—The principal statistics for the coal-mining industry in 1919 for the United States as a whole are presented in Table 1. These statistics are separately given for producing anthracite mines, for producing bituminous mines, and for nonproducing coal mines.

TABLE 1.—PRINCIPAL STATISTICS, ALL ENTERPRISES: 1919.

	Aggregate.	PRODUCING ENTERPRISES.				Nonproducing enterprises.	
		Total.	Anthracite (Pennsylvania).		Bituminous coal.		
			Number or amount.	Per cent of total.	Number or amount.		Per cent of total.
Number of enterprises.....	6,916	6,890	254	3.7	6,636	96.3	26
Number of mines.....	8,682	8,656	1,374	4.3	8,282	95.7	26
Coal land operated..... acres..	8,547,434	8,522,727	261,355	3.1	8,261,372	96.9	24,707
Persons engaged.....	739,019	738,490	154,882	21.0	583,608	79.0	529
Proprietors and firm members, total.....	4,401	4,396	159	3.6	4,237	96.4	5
Number performing manual labor.....	1,886	1,864	24	1.3	1,840	98.2	2
Salaried employees.....	40,977	40,924	7,851	19.0	33,073	82.0	58
Wage earners (average number).....	693,641	693,170	147,372	21.3	545,798	78.7	471
Wage earners Dec. 15 or nearest representative day:							
Above ground.....	155,838	155,364	46,618	30.0	108,746	70.0	474
Below ground.....	614,629	614,282	105,626	17.2	508,657	82.8	347
Power used (aggregate horsepower).....	3,057,729	3,055,195	890,783	29.5	2,155,412	70.5	2,534
Capital.....	\$2,343,085,332	\$2,338,318,162	\$433,868,089	18.6	\$1,904,450,123	81.4	\$5,617,170
Principal expenses:							
Salaries.....	\$81,744,493	\$81,664,507	\$12,995,460	15.9	\$68,669,038	84.1	\$79,966
Wages.....	\$893,481,365	\$892,890,541	\$210,289,473	23.6	\$682,601,068	76.4	\$590,824
Contract work.....	\$4,426,346	\$4,413,811	\$1,557,845	35.3	\$2,855,966	64.7	\$12,586
Supplies and materials.....	\$203,255,478	\$202,604,245	\$60,171,094	29.7	\$142,433,151	70.3	\$651,231
Fuel and purchased power.....	\$50,498,420	\$50,483,121	\$19,305,982	26.4	\$31,177,139	73.6	\$15,269
Royalties and rents.....	\$34,081,130	\$34,061,654	\$11,766,598	34.5	\$22,295,056	65.5	\$19,476
Taxes.....	\$48,814,648	\$48,798,359	\$14,060,968	28.8	\$34,737,391	71.2	\$46,289
Expenditures for development (included in the above items).....	\$37,487,973	\$36,234,369	\$6,189,990	17.1	\$30,044,379	82.9	\$1,253,604
Value of all products.....	\$1,510,061,707	\$1,510,061,707	\$364,084,142	24.1	\$1,145,977,565	75.9	.....
Coal:							
Quantity (tons, 2,000 pounds).....	548,596,344	548,596,344	83,170,508	16.1	465,425,836	85.0	.....
Value at mine.....	\$1,508,267,421	\$1,508,267,421	\$363,944,774	24.1	\$1,144,322,647	75.9	.....
Other products <sup>2</sup> .....	\$1,794,286	\$1,794,286	\$130,868	7.8	\$1,663,418	92.2	.....

<sup>1</sup> In addition to mines, the anthracite enterprises reported 245 breakers, 79 washeries, and 81 dredges.

<sup>2</sup> Includes \$433,318, the cost of anthracite purchased for resale.

<sup>3</sup> Includes receipts for mineral by-products, products not specified, and for power, work, or miscellaneous services for other enterprises.

The total number of enterprises for which returns were received by the Bureau of the Census was 6,916, of which 6,636 operated 8,282 bituminous coal mines, 254 operated 374<sup>1</sup> anthracite mines, and 26 unproductive enterprises operated 25 bituminous coal mines and 1 anthracite mine.

<sup>1</sup> The anthracite enterprises comprised 261 collieries operating 374 mines, 245 breakers, and 60 washeries; 19 culm washeries operated independently of mines; and 81 dredges. It should be noted that in some tables reporting statistics for anthracite enterprises the figure 361, representing collieries, independent culm washeries, and dredges, is given as comparable to the number 420, reported at the census of 1909; in other tables reporting the number of mines the figure 374, which represents mines only, is given; and in still others the number 534 is given, which is the total count of all mines, washeries, and dredges (breakers not being counted because regarded as beneficiating plants operated in connection with mines).

The average number of wage earners employed by all coal mines was 693,641, of which producing bituminous coal enterprises reported 545,798, anthracite enterprises 147,372, and nonproducing enterprises 471.

The unproductive enterprises, operating 26 mines, reported work for the purpose of development only. These operations were relatively insignificant as compared with the operations of productive enterprises, which included development work amounting to \$36,234,369, whereas the amount of expenditures credited to development work by the nonproducing enterprises was only \$1,253,604.

The output of all coal mines during the census year was 548,596,344 short tons of coal valued at

\$1,508,267,421. In addition to the value of coal produced, the producing enterprises received \$1,794,286 for other products, which comprised the following items:

OTHER PRODUCTS.	Amount received.
Clay.....	\$323, 196
Coke.....	96, 016
Pyrite.....	63, 378
Sandstone.....	4, 241
Not specified.....	14, 944
Power sold, and work or miscellaneous services for other enterprises.....	1, 292, 511

The gross value of products of the coal-mining industry, embracing the above items, also included \$433,318, which represented the cost of 122,725 tons of anthracite purchased by some operators from others within the industry and resold and reported by the purchaser as part of his product.

Coal mining is the most important mining industry in the United States. It outranked all other mining industries in 1919 in all important statistical items except the amount of capital invested, the acreage of mineral land controlled, and the amount paid for rent and royalties, in which items it was exceeded by the petroleum and natural-gas industry. The coal-mining industry accounted for 47.8 per cent of the total value of products of all mining industries in 1919 (\$3,158,463,966) and employed 70.6 per cent of the total average number of wage earners (981,560). In value of products the coal-mining industry exceeded the industry next in rank, petroleum and natural gas, by about 60 per cent of the value of the latter. The average number of wage earners employed in the coal-mining industry was more than seven times the number in the petroleum and natural-gas industry, and more than 15 times the numbers in the iron-ore and copper-mining industries, which were next in importance. Moreover, bituminous-coal mining, separately considered, outranked all other mining industries, with products valued at 36.3 per cent of the total value of products and with 55.6 per cent of the total

average number of wage earners in all mining industries. Anthracite mining, with 11.5 per cent of the total value of products for the United States, was outranked by the petroleum and natural-gas industry in value of products but exceeded that industry and all others except bituminous-coal mining in the average number of wage earners employed, having 15 per cent of the total average number for the United States.

Table 1 also shows the distribution of the principal statistics for the coal-mining industry as between anthracite (Pennsylvania) and bituminous coal-mining enterprises. Anthracite mining represents a very small part of the coal-mining industry as measured by the number of enterprises or mines and acreage operated but on the basis of wage earners employed, it represents more than one-fifth, on tonnage produced, nearly one-sixth, and on value of products, nearly one-fourth of the total coal-mining industry.

#### GEOGRAPHIC DISTRIBUTION.

Producing regions and states.—Coal was produced in 1919 in the following 30 states:

Alabama.	Kentucky.	Oregon.
Arkansas.	Maryland.	Pennsylvania.
California.	Michigan.	South Dakota.
Colorado.	Missouri.	Tennessee.
Georgia.	Montana.	Texas.
Idaho.	New Mexico.	Utah.
Illinois.	North Carolina.	Virginia.
Indiana.	North Dakota.	Washington.
Iowa.	Ohio.	West Virginia.
Kansas.	Oklahoma.	Wyoming.

Six of these states, California, Georgia, Idaho, North Carolina, Oregon, and South Dakota, each producing less than 100,000 tons, were quite unimportant in coal mining. The important statistical items relating to coal mining in the states are assembled in Table 2 by the usual geographic divisions in order that statistics for this industry may be compared with other census statistics distributed by these geographic divisions.

TABLE 2.—PRINCIPAL STATISTICS FOR PRODUCING ENTERPRISES, BY GEOGRAPHIC DIVISIONS: 1919.

DIVISION.	Number of enterprises.	Number of mines.	Coal land operated (acres).	Wage earners (average number).	Power used (aggregate horsepower).	Capital.	Wages.	Supplies and materials including fuel and rent of power.	PRODUCTS.		
									Total value of all products.	Coal produced (tons, 2,000 pounds).	Value of coal at mines.
United States.....	6, 890	8, 656	8, 522, 727	693, 170	3, 055, 195	\$2, 338, 318, 162	\$902, 890, 541	\$252, 654, 048	\$1, 510, 061, 707	548, 596, 344	\$1, 508, 267, 421
Middle Atlantic.....	2, 192	2, 958	1, 753, 274	302, 264	1, 558, 746	1, 082, 494, 849	421, 636, 166	129, 079, 055	727, 058, 094	238, 200, 195	726, 115, 636
East North Central.....	1, 541	1, 728	1, 380, 572	140, 265	489, 756	363, 211, 867	165, 410, 377	39, 592, 805	266, 111, 037	116, 971, 961	265, 798, 580
West North Central.....	554	636	218, 969	26, 727	79, 979	39, 568, 117	30, 823, 152	6, 970, 580	46, 657, 042	15, 230, 046	46, 638, 357
South Atlantic.....	1, 092	1, 497	2, 285, 625	108, 136	406, 579	406, 031, 091	124, 109, 250	36, 829, 973	225, 067, 450	89, 949, 237	224, 909, 737
East South Central.....	930	1, 145	1, 678, 273	73, 973	246, 789	221, 576, 637	82, 643, 224	22, 838, 707	131, 816, 713	49, 969, 621	131, 644, 317
West South Central.....	212	264	179, 481	12, 538	57, 647	24, 549, 491	15, 114, 481	3, 596, 546	24, 091, 691	6, 811, 627	24, 070, 916
Mountain.....	322	373	947, 426	29, 351	179, 260	180, 654, 346	46, 322, 668	11, 646, 780	78, 194, 433	28, 384, 568	78, 087, 288
Pacific.....	35	43	65, 940	4, 413	32, 190	15, 987, 324	6, 515, 968	2, 018, 711	10, 737, 656	2, 986, 910	10, 680, 109
All other states <sup>1</sup> .....	12	12	13, 167	308	1, 249	2, 244, 480	315, 235	80, 891	327, 591	92, 269	327, 481

<sup>1</sup> Includes California, 1; Georgia, 1; Idaho, 1; North Carolina, 1; Oregon, 2; South Dakota, 5.

According to inherent features of coal deposits, such as the kind and quality of the coal and the natural conditions which affect their industrial development, coal-producing areas are grouped in six major provinces—the Eastern Province, the Interior Province, the Gulf Province, the Northern Great Plains Province, the Rocky Mountain Province, and the Pacific Coast Province. For the first two provinces statistics are shown separately by states and by principal coal regions. Statistics for the Gulf Province relate only to lignite mines in Texas. They can not be shown separately and are combined with statistics for other (bituminous coal) mines in Texas, which are in the Interior Province. Statistics for mines in the three provinces of the western United States can be given only by states and as the province boundaries divide four important states, totals for the separate provinces can not be given. The following definitions and descriptions of the provinces and regions used for presentation of census statistics conform as closely as possible to the definitions of the standard coal provinces and regions as laid down by the United States Geological Survey. (See map on following page.)

1. The Eastern Province is subdivided into the Rhode Island Anthracite Region, the Pennsylvania Anthracite Region, the Atlantic Region, and the Northern, Middle, and Southern Appalachian Regions. The Rhode Island Anthracite Region contains a little graphitic coal of no commercial importance. The Pennsylvania Anthracite Region is in Wayne, Susquehanna, Lackawanna, Luzerne, Carbon, Schuylkill, Columbia, Northumberland, Dauphin, and Sullivan Counties. It is divided into three principal fields, the Northern or Wyoming, the Middle or Lehigh, and the Southern or Schuylkill, and a fourth field, the Bernice Basin in Sullivan County, which is for convenience combined in this report with the Wyoming or Northern Field. The Atlantic Coast Region of the Eastern Province, in Virginia, North Carolina, and South Carolina, is unimportant and data for one enterprise reporting from this region for 1919 are combined with statistics for the Southern Appalachian Region. The Northern and Middle Appalachian Regions include the many coal fields of Pennsylvania, Ohio, Maryland, Virginia, and West Virginia, eastern Kentucky, and northeastern Tennessee. Coals of these regions are all of high rank from bituminous to semianthracite, and although conditions are somewhat different in the two regions separate statistical presentation is not made in this report. The Southern Appalachian Region includes southeastern Tennessee, Alabama, and Georgia. The coals of this region also are of high rank.

2. The Interior Province includes all the bituminous coal fields and regions near the Great Lakes, in the Mississippi Valley, and in Texas. It is made up of four distinct regions, the Northern Region in Michigan and the Eastern Region in Illinois, Indiana, and western Kentucky for which statistics are presented sep-

ately; the Western Region in Iowa, Missouri, and Kansas, and the Southern Region in Arkansas, Oklahoma, and the bituminous coal fields of Texas. The coals of the Interior Province, are, with the exception of some in Arkansas and eastern Oklahoma, bituminous coals of low rank. Those excepted are of higher rank, approximately equivalent to the Appalachian coals. The statistics for the Southern Interior Region include the statistics for the lignite fields of Texas which are a part of the Gulf Province.

3. The Northern Great Plains, Rocky Mountain, and Pacific Coast Provinces in the states of North Dakota, South Dakota, Montana, Idaho, Wyoming, Utah, Colorado, and New Mexico, which comprise the coal fields of the Great Plains east of the Front Range of the Rocky Mountains and those within the Rocky Mountains; and also the coal fields of the Pacific coast states, Washington, Oregon, and California. The coal-bearing areas in the Great Plains Province contain chiefly lignite and subbituminous coals, but locally within these areas coals of higher rank are produced. The Rocky Mountain Province contains a great variety of coal ranging from lignite to anthracite, including all the recognized ranks although prevailing grades are subbituminous and low-grade bituminous coal. The Pacific Coast Province is limited largely to the state of Washington which is fairly well supplied with subbituminous and bituminous coals and which has locally also some anthracite. Both California and Oregon have small coal fields but the coal is generally of low rank and poor quality and has been little mined.

**Principal statistics by regions: 1919.**—Table 3 presents the principal statistics for all producing coal-mining enterprises for 1919, by provinces and regions, and gives the percentage distribution. The productive area of the Eastern Province, comprising the Pennsylvania anthracite and the Appalachian bituminous-coal regions, reported 70 per cent of the total number of producing enterprises in the United States, employed 73 per cent of the total average number of wage earners, and produced 74 per cent of the total tonnage of coal, valued at 76 per cent of the total value of all products of the coal industry in the United States. The Northern and Middle Appalachian Regions are the most important regions, and of the two the Northern far outranks the Middle. The Eastern Interior Region is next in importance, and is followed by the Southern Appalachian Region. Although the table appears to show the regions of the western states as outranking several other regions, it is to be noted that the statistics for the western states are shown combined for three provinces which comprise several regions each. More than 86 per cent of the bituminous coal-mining industry, as measured by average number of wage earners, 88 per cent by quantity of coal produced, and over 85 per cent by the value of products, is concentrated in the Appalachian and Eastern Interior Regions.

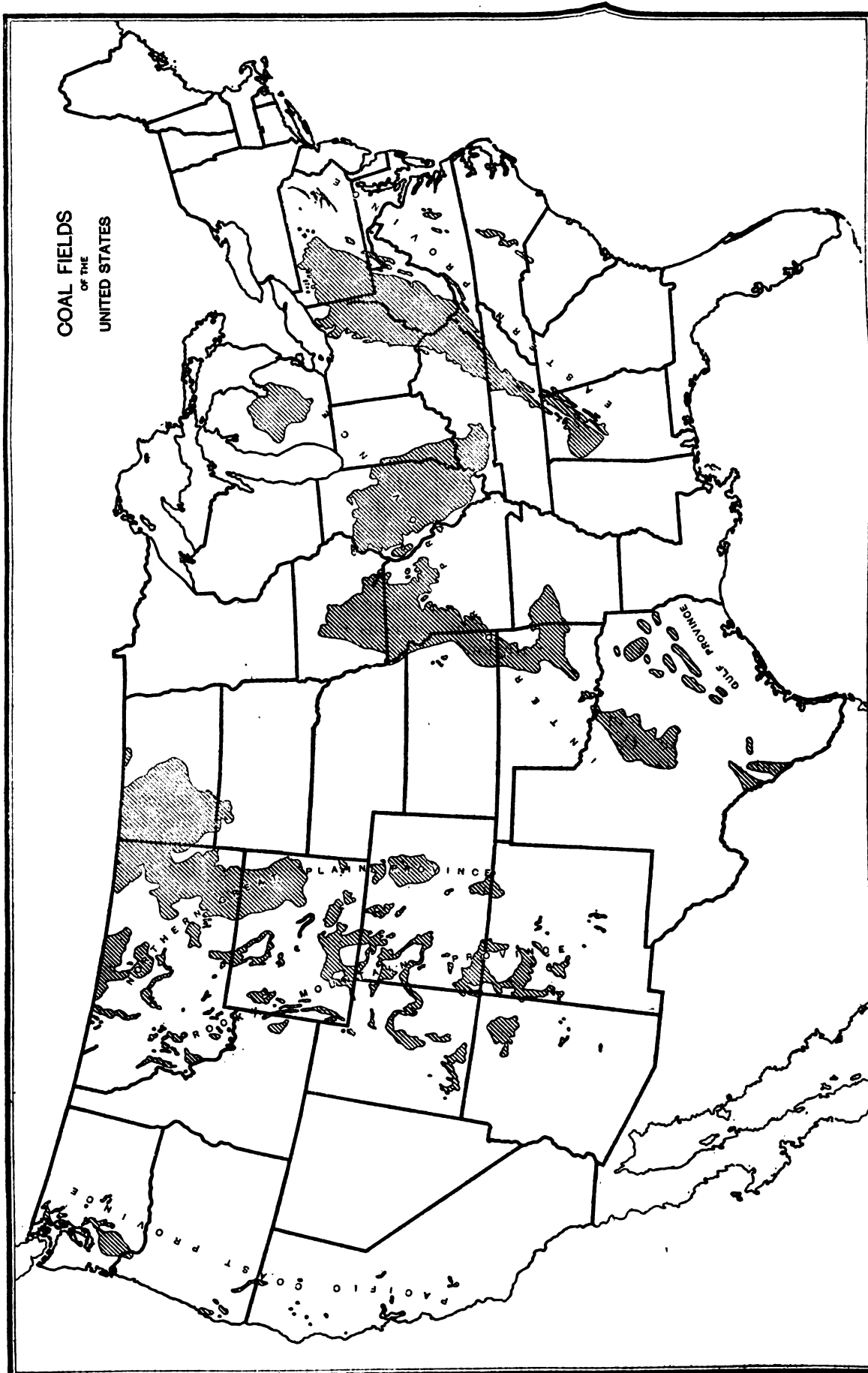


TABLE 8.—PRINCIPAL STATISTICS FOR PRODUCING ENTERPRISES, BY MINING PROVINCES AND REGIONS: 1919.

PROVINCE AND REGION.	Number of enterprises.	Number of mines.	Coal land operated (acres).	WAGE EARNERS.			Power used (aggregate horsepower).	Capital.	Wages.
				Average number.	December 15 or nearest representative day.				
					Above ground.	Below ground.			
UNITED STATES.....	6,890	8,656	8,522,727	693,170	155,364	614,282	3,055,195	\$2,338,318,162	\$592,890,541
EASTERN PROVINCE.....	4,838	6,310	5,968,455	509,161	123,049	431,762	2,316,564	\$1,833,614,724	\$666,061,981
Per cent distribution.....	70.2	72.9	70.0	73.5	79.2	70.3	75.8	78.4	74.6
Pennsylvania Anthracite Region.....	254	1,374	261,355	147,372	46,618	105,625	899,783	\$433,868,039	\$210,289,473
Per cent distribution.....	3.7	4.3	3.1	21.3	30.0	17.2	29.5	18.6	23.6
Northern and Middle Appalachian Regions.....	4,379	5,648	4,859,029	334,615	69,607	304,052	1,315,455	\$1,326,507,550	\$425,516,157
Per cent distribution.....	63.6	65.2	57.0	48.3	44.8	49.5	43.1	56.7	47.7
Southern Appalachian Region <sup>1</sup> .....	205	288	848,071	27,174	6,824	22,075	101,326	\$73,289,185	\$39,276,851
Per cent distribution.....	3.0	3.3	10.0	3.9	4.4	3.6	3.3	3.1	3.4
INTERIOR PROVINCE <sup>2</sup> .....	1,608	1,841	1,519,703	149,284	23,581	151,543	524,517	\$304,949,481	\$172,820,709
Per cent distribution.....	23.2	21.3	17.8	21.6	15.2	24.7	17.2	13.0	19.4
Michigan Region.....	11	14	9,109	1,654	304	1,837	6,884	\$6,037,645	\$1,987,732
Per cent distribution.....	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.3	0.2
Eastern Interior Region.....	908	1,006	1,129,818	109,239	15,665	111,530	382,044	\$226,679,575	\$125,924,470
Per cent distribution.....	13.2	11.6	13.3	15.8	10.1	18.2	12.5	10.1	14.1
Western Interior Region.....	475	557	201,235	25,953	4,961	25,802	77,942	\$37,702,770	\$29,794,026
Per cent distribution.....	6.9	6.4	2.4	3.7	3.2	4.2	2.6	1.6	3.3
Southern Interior Region <sup>3</sup> .....	212	264	179,481	12,838	2,641	12,404	57,647	\$24,549,491	\$15,114,481
Per cent distribution.....	3.1	3.0	2.1	1.8	1.7	2.0	1.9	1.0	1.7
NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST PROVINCES.....	446	506	1,084,569	34,625	8,724	30,967	214,114	\$199,733,967	\$53,987,851
Per cent distribution.....	6.5	5.8	12.1	5.0	5.6	5.0	7.0	8.5	6.0

PROVINCE AND REGION.	Contract work.	Cost of supplies and materials.	Cost of fuel.	Cost of purchased power.	PRODUCTS.		
					Total value of all products.	Coal produced (tons, 2,000 pounds).	Value of coal at mines.
UNITED STATES.....	\$4,413,811	\$202,170,927	\$37,302,777	\$13,180,344	\$1,510,061,707	\$548,586,344	\$1,508,267,421
EASTERN PROVINCE.....	\$3,636,290	\$160,249,162	\$26,293,462	\$10,770,989	\$1,144,226,336	\$405,044,798	\$1,142,747,308
Per cent distribution.....	80.1	79.3	70.5	81.7	75.8	73.8	75.8
Pennsylvania Anthracite Region.....	\$1,557,845	\$59,738,376	\$11,406,117	\$1,899,835	\$364,084,142	\$88,170,508	\$303,944,774
Per cent distribution.....	35.3	29.5	30.6	14.4	24.1	16.1	24.1
Northern and Middle Appalachian Regions.....	\$1,872,780	\$94,803,715	\$13,336,055	\$8,398,964	\$731,847,202	\$300,897,540	\$730,533,249
Per cent distribution.....	42.4	46.9	35.8	63.7	48.5	54.8	48.4
Southern Appalachian Region <sup>1</sup> .....	\$105,685	\$5,707,071	\$1,551,290	\$472,190	\$48,295,042	\$16,476,750	\$48,269,285
Per cent distribution.....	2.4	2.8	4.2	3.6	3.2	3.0	3.2
INTERIOR PROVINCE <sup>2</sup> .....	\$648,805	\$31,184,802	\$8,809,498	\$1,330,665	\$274,873,241	\$111,380,440	\$274,723,614
Per cent distribution.....	14.7	15.4	23.6	10.1	18.2	20.3	18.2
Michigan Region.....		\$664,557	\$264,876	\$36,701	\$3,861,874	\$995,999	\$3,861,874
Per cent distribution.....		0.3	0.7	0.3	0.3	0.2	0.3
Eastern Interior Region.....	\$183,573	\$22,978,613	\$6,296,357	\$838,062	\$202,189,938	\$89,110,563	\$202,078,992
Per cent distribution.....	4.2	11.4	16.9	6.4	13.4	16.2	13.4
Western Interior Region.....	\$345,898	\$5,045,311	\$1,356,859	\$247,083	\$44,729,738	\$14,462,351	\$44,711,832
Per cent distribution.....	7.8	3.6	3.6	1.9	3.0	2.6	3.0
Southern Interior Region <sup>3</sup> .....	\$119,334	\$2,496,321	\$801,406	\$308,819	\$24,091,091	\$6,811,527	\$24,070,916
Per cent distribution.....	2.7	1.2	2.4	1.6	1.6	1.2	1.6
NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST PROVINCES.....	\$228,716	\$10,736,963	\$2,199,817	\$1,078,690	\$80,962,080	\$32,171,106	\$80,796,499
Per cent distribution.....	5.2	5.3	5.9	8.2	6.0	5.9	6.0

<sup>1</sup> In addition to mines, the anthracite enterprises reported 245 breakers, 79 washeries, and 81 dredges.  
<sup>2</sup> Includes the Atlantic Region.  
<sup>3</sup> Includes the Texas Region of the Gulf Provinces.  
<sup>4</sup> Exclusive of \$433,318, cost of coal purchased for resale by anthracite enterprises.

Rank of states.—In Table 4 the coal-producing states are ranked according to value of products of the coal-mining industry, and the number of enterprises, average number of wage earners, and value of products are shown together with the per cent distribution for wage earners and value of products.

Principal statistics for anthracite enterprises, by fields.—Table 5 shows the principal statistics for anthracite mines segregated by fields. The data are given separately for collieries proper, which produce freshly mined coal, and for culm washeries and river dredges which recover previously mined coal. The separation of statistics for freshly mined coal from other coal is quite incomplete, as washeries operated by collieries in connection with breakers recover more coal than the independent washeries and dredges, but did not give separate data for such operations. As measured by quantity or value of products, by the average number of wage earners employed, and by the number of collieries, the Wyoming or Northern field ranked first, accounting for more than half of these items; the Schuylkill or Southern field was second and the Lehigh or Middle field was third. Dredging was practiced chiefly in the Schuylkill field; but although only three dredges were reported from each of the other fields the six produced 20 per cent of the dredge output.

TABLE 4.—RANK OF STATES, PRODUCING ENTERPRISES: 1919.

STATE.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.
United States.....	6,890	693,170	100.0	\$1,510,061,707	100.0
Anthracite (Pennsylvania)..	254	147,372	21.3	364,084,142	24.1
Bituminous coal.....	6,636	545,798	78.7	1,145,977,565	75.9
Pennsylvania.....	2,192	302,364	43.6	727,058,094	48.1
Anthracite.....	254	147,372	21.3	364,084,142	24.1
Bituminous coal.....	1,938	154,992	22.4	362,973,952	24.0
West Virginia.....	926	87,095	12.6	193,108,343	12.8
Illinois.....	447	73,780	10.7	138,767,835	9.2
Ohio.....	788	40,452	5.8	77,988,602	5.2
Kentucky.....	635	39,769	5.7	72,432,840	4.8
Indiana.....	295	24,479	3.5	45,492,726	3.0
Alabama.....	188	24,648	3.6	45,359,441	3.0
Colorado.....	161	11,252	1.6	28,342,195	1.9
Virginia.....	108	11,215	1.6	23,763,440	1.6
Wyoming.....	46	7,091	1.0	18,723,461	1.2
Iowa.....	167	10,584	1.5	16,903,358	1.1
Kansas.....	129	8,084	1.2	15,748,535	1.0
Oklahoma.....	94	7,040	1.0	14,477,317	1.0
Tennessee.....	107	9,556	1.4	14,024,422	0.9
Utah.....	27	3,647	0.5	12,632,035	0.8
Missouri.....	179	7,235	1.1	12,077,845	0.8
Washington.....	35	4,413	0.6	10,737,656	0.7
New Mexico.....	21	3,564	0.5	9,905,541	0.7
Montana.....	67	3,797	0.6	8,591,211	0.6
Maryland.....	58	4,826	0.7	8,195,667	0.5
Arkansas.....	85	2,787	0.4	5,282,274	0.4
Texas.....	33	2,711	0.4	4,322,100	0.3
Michigan.....	11	1,654	0.2	3,861,874	0.3
North Dakota.....	79	774	0.1	1,927,304	0.1
South Dakota.....	5	8	( <sup>1</sup> )	29,892	( <sup>1</sup> )
All other states <sup>2</sup> .....	7	295	( <sup>1</sup> )	297,669	( <sup>1</sup> )

<sup>1</sup> Less than one-tenth of 1 per cent.

<sup>2</sup> Includes enterprises for states listed in order of value of products as follows: Georgia, 1; Oregon, 3; North Carolina, 1; Idaho, 1; California, 1.

TABLE 5.—PRINCIPAL STATISTICS FOR ANTHRACITE (PENNSYLVANIA), BY FIELDS: 1919.

	Total.	WYOMING FIELD.			LEHIGH FIELD.			SCHUYLKILL FIELD.		
		Collieries proper.	Washeries and dredges.	Per cent of total.	Collieries proper.	Washeries and dredges.	Per cent of total.	Collieries proper.	Washeries and dredges.	Per cent of total.
Number of enterprises.....	254	85	13	38.6	26	5	12.2	45	80	49.2
Number of mines.....	374	237	.....	63.4	51	.....	13.6	86	.....	23.0
Number of breakers.....	245	135	.....	55.1	29	.....	11.8	81	.....	33.1
Number of culm washeries.....	79	31	.....	51.9	11	.....	16.5	18	.....	31.6
Number of dredges.....	81	.....	3	3.7	.....	3	3.7	.....	75	92.6
Coal land operated.....acres.	261,355	120,168	.....	46.0	26,746	.....	10.2	114,441	.....	43.8
Coal land controlled.....acres.	272,345	123,099	.....	45.2	27,827	.....	10.2	121,419	.....	44.6
Owned.....acres.	194,390	78,404	.....	40.3	13,768	.....	7.1	102,228	.....	52.6
Held under lease.....acres.	77,955	44,695	.....	57.3	14,059	.....	13.0	19,191	.....	24.6
Wage earners (average number).....	147,372	83,723	296	57.0	19,356	116	13.2	43,503	438	29.8
Capital.....	\$433,868,039	\$233,080,051	\$97,283	53.9	\$63,404,502	\$652,508	14.8	\$133,861,049	\$1,972,646	31.3
Expenses (selected items):										
Wages.....	\$210,299,473	\$118,506,173	\$259,167	56.5	\$27,843,467	\$120,596	12.3	\$63,050,379	\$509,691	30.2
Contract work.....	\$1,567,845	\$536,242	.....	34.6	\$615,165	.....	39.5	\$382,960	\$41,478	26.0
Supplies and materials <sup>1</sup> .....	\$90,171,694	\$34,818,892	\$137,601	58.1	\$8,100,966	\$57,020	13.6	\$16,778,026	\$279,189	28.3
Cost of fuel.....	\$11,406,117	\$6,420,747	\$3,129	56.3	\$2,143,683	\$15,719	18.9	\$2,763,868	\$68,971	24.7
Cost of purchased power.....	\$1,899,835	\$566,681	\$49,103	32.4	\$647,666	\$33,388	35.8	\$584,193	\$18,804	31.7
Royalties and rents.....	\$11,766,598	\$5,597,684	\$197,888	49.3	\$1,710,713	\$3,782	14.6	\$4,096,761	\$159,770	36.2
Value of all products.....	\$364,084,142	\$207,659,034	\$1,079,455	57.3	\$53,961,307	\$415,252	14.9	\$99,385,409	\$1,583,625	27.7
Coal produced.....tons, 2,240 pounds..	78,723,668	43,016,308	236,807	55.0	11,881,375	176,846	15.3	22,520,591	829,746	29.7
Power used (aggregate horsepower).....	899,783	406,333	2,768	45.5	111,090	1,833	12.6	373,551	5,208	42.0
Prime movers.....	782,090	373,976	.....	47.9	75,372	.....	9.8	328,099	3,447	42.4
Electric motors run by purchased current.....	117,693	32,357	2,512	29.6	35,718	893	31.1	44,462	1,761	39.3
Electric motors run by current generated by the enterprise reporting.....	185,723	152,966	.....	82.4	740	.....	0.4	32,017	.....	17.2
Fuel used:										
Coal, anthracite.....tons, 2,240 pounds..	3,548,201	4,096,032	821	47.9	1,164,033	3,003	13.7	3,290,885	14,427	38.4
Coal, bituminous.....tons, 2,000 pounds..	4,096	80	50	3.2	.....	.....	.....	.....	3,966	96.8
Oils.....barrels.....	2,052	34	.....	1.7	737	.....	35.9	237	1,044	62.4

<sup>1</sup> Includes \$433,318, cost of coal purchased for resale.

PROGRESS OF THE INDUSTRY.

Comparative statistics, producing enterprises: 1919, 1909, 1902, and 1889.—Table 6 gives for producing enterprises the principal items of the census statistics for 1919, 1909, 1902, and 1889, which are comparable. The statistics for 1909 in this table were adjusted at the census of 1909 to relate solely to coal mining by reducing the general census statistics for the bituminous coal-mining industry for that year by the amounts attributable to the manufacture of coke at the mine.<sup>1</sup> The number of enterprises given for 1909 is the total number as shown in Table 11, page 344, of the General Tables, in the Thirteenth Census report for Mines and Quarries, regardless of duplication of operators, and is entirely comparable with the number of enterprises reported for 1919. The statistics for

<sup>1</sup> See explanation relating to Table 3 (p. 186), Thirteenth Census of the United States, Volume XI, Mines and Quarries, 1909, chapter 4, Coal page 184.

1909 and 1919 are exclusive of data for mines operated by governmental and eleemosynary institutions. The tonnage and value of coal shown for 1889 include the quantity and value of the output of many small "banks" or local mines, which are not included in the number of mines given or in the statistics of acreage, capital, or expenses. However, the total output of these mines was very small, so that its inclusion does not materially affect the relation of the production data to the other items. The statistics for anthracite are for Pennsylvania only, the data for Colorado and New Mexico anthracite being included with the statistics for bituminous coal.

Salaries of foremen, totaling \$3,510,543, have been deducted from the wages published in the 1889 statistics, since in the returns for 1909 the payments to inside and outside foremen were included in salaries, and in the returns for 1919 they were also largely but not entirely so included.

TABLE 6.—COMPARATIVE STATISTICS, PRODUCING ENTERPRISES: 1919, 1909, 1902, AND 1889.

	1919	1909 <sup>1</sup>	1902	1889	PER CENT OF INCREASE. <sup>2</sup>		
					1909-1919	1902-1909	1889-1902
<b>UNITED STATES.</b>							
Number of enterprises.....	6,890	* 4,716	4,626	( <sup>3</sup> )	46.1	4.2	.....
Number of mines, collieries, culm washeries, and dredges.....	5,643	6,436	5,985	2,564	34.3	7.5	133.5
Wage earners (average number).....	693,170	657,175	350,329	296,623	5.5	87.6	18.1
Capital.....	\$2,338,318,163	\$1,207,217,543	( <sup>4</sup> )	\$342,757,929	93.7	.....	.....
Wages.....	\$862,890,541	\$374,698,545	\$220,198,401	\$103,426,515	133.3	70.2	112.9
Cost of supplies (including fuel and purchased power).....	* \$252,654,048	\$72,043,898	\$57,539,702	\$18,828,590	250.7	91.9	99.4
Coal produced:							
Tons (2,000 pounds).....	548,596,344	457,833,640	301,590,439	141,239,513	19.8	51.8	113.5
Value at mines.....	\$1,508,267,421	\$550,513,896	\$367,032,069	\$160,226,323	174.0	50.0	129.1
<b>ANTHRACITE (PENNSYLVANIA).</b>							
Number of enterprises.....	254	359	119	( <sup>3</sup> )	-29.2	201.7	.....
Number of collieries, culm washeries, and dredges.....	361	420	334	346	-14.0	25.7	-3.5
Wage earners (average number).....	147,372	169,175	69,091	123,732	-12.9	142.8	-43.7
Capital.....	\$423,838,039	\$246,713,318	( <sup>4</sup> )	\$162,035,610	75.9	.....	.....
Wages.....	\$210,239,473	\$92,169,908	\$38,716,113	\$37,854,273	123.2	133.1	2.3
Cost of supplies (including fuel and purchased power).....	* \$78,044,328	\$26,662,088	\$12,749,789	\$10,834,380	174.0	109.3	17.6
Coal produced:							
Tons (2,000 pounds).....	88,170,508	80,881,106	41,373,596	45,000,457	9.0	95.5	-9.3
Value at mines.....	\$368,944,774	\$148,957,894	\$76,173,586	\$65,879,514	144.3	95.6	15.6
<b>BITUMINOUS COAL.</b>							
Number of enterprises.....	6,636	4,357	4,409	( <sup>3</sup> )	52.3	-1.2	.....
Number of mines.....	3,232	6,016	5,652	2,215	37.7	6.4	154.8
Wage earners (average number).....	545,798	488,000	280,638	172,841	11.8	73.9	62.4
Capital.....	\$1,904,450,123	\$960,504,225	( <sup>4</sup> )	\$180,722,319	98.3	.....	.....
Wages.....	\$632,601,068	\$332,526,639	\$181,482,268	\$65,572,242	141.6	55.7	176.8
Cost of supplies (including fuel and purchased power).....	\$179,609,730	\$45,381,810	\$24,798,922	\$7,994,210	293.8	83.0	210.2
Coal produced:							
Tons (2,000 pounds).....	490,426,836	376,952,534	260,216,944	95,629,026	22.1	44.9	172.1
Value at mines.....	\$1,144,322,647	\$401,555,973	\$290,858,483	\$94,346,809	185.0	33.1	208.3

<sup>1</sup> Statistics for 1909 relating to coke manufacture at mines excluded, partly by estimate.

<sup>2</sup> A minus sign (-) denotes decrease.

<sup>3</sup> At the census of 1909 the number of operators was given instead of the number of enterprises in most tables. In order to present comparable figures the number of enterprises in 1909 is given in this and other comparative tables.

<sup>4</sup> Not reported.

<sup>5</sup> Exclusive of \$433,318, cost of coal purchased for resale by anthracite enterprises.

The table shows very notable growth for the industry as a whole at each census period, but in two respects the increases of the last decade (1909 to 1919) were small as compared with earlier increases. These are in the average number of wage earners employed (for which decrease is shown in anthracite mining), and in the quantity of coal produced. The

value of coal produced in 1919 shows a very large increase over 1909, which is due to price increases, the value per ton having more than doubled during the ten-year period. Similarly the large increases as shown in the table for wages and supplies in 1919 as compared with 1909 are due more largely to general price increases than to growth of the industry.



Comparative summary, producing enterprises: 1919 and 1909.—Table 7 gives the principal statistics for producing anthracite and bituminous coal-mining enterprises for 1919 and 1909. The data there shown differ from those in Table 6 in that the adjustment to exclude data for 1909 relating to coke manufacture at

the mines has not been made, the purpose of the table being to give the gross statistics relating to coal mining as presented in results of the Thirteenth and Fourteenth Censuses. It will be noted that the increases and decreases shown in Table 7 are not essentially different from those in Table 6.

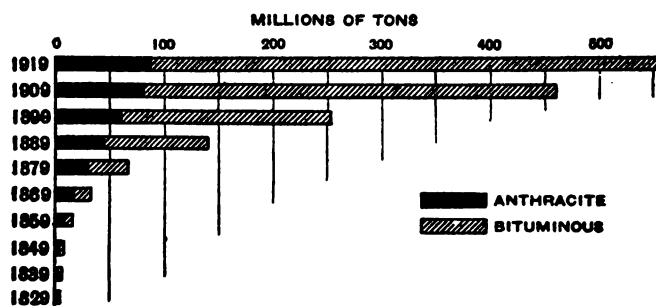
TABLE 7.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919 AND 1909.<sup>1</sup>

	TOTAL <sup>1</sup>		ANTHRACITE (PENNSYLVANIA).		BITUMINOUS. <sup>1</sup>		PER CENT OF INCREASE. <sup>2</sup>		
	1919	1909	1919	1909	1919	1909 <sup>3</sup>	Total.	Anthracite.	Bituminous.
Number of enterprises.....	6,890	4,716	254	359	6,636	4,357	46.1	-29.2	52.3
Number of mines, collieries, culm washeries, and dredges.....	8,643	6,436	361	420	8,282	6,016	34.3	-14.0	37.7
Coal land operated.....acres..	8,522,727	6,847,545	261,355	273,499	8,261,372	6,574,046	24.5	-4.4	25.7
Persons engaged.....	738,490	708,478	154,882	173,665	583,608	534,813	4.2	-10.8	9.1
Proprietors and firm members (total).....	4,396	3,927	159	188	4,237	3,739	11.9	-15.4	13.3
Number performing manual labor.....	1,864	1,785	34	72	1,830	1,713	4.4	.....	6.8
Salaried employees.....	40,924	23,461	7,351	4,302	33,573	19,159	74.4	70.9	75.2
Wage earners (average number).....	693,170	681,090	147,372	169,175	545,798	511,915	1.8	-12.9	6.6
Power used (aggregate horsepower).....	3,065,195	1,904,154	899,783	676,128	2,165,412	1,228,026	60.4	33.1	75.5
Capital.....	\$2,338,318,162	\$1,309,125,161	\$433,868,039	\$246,713,818	\$1,904,450,123	\$1,062,411,843	78.6	75.9	79.3
Principal expenses:									
Salaries.....	81,664,507	26,384,199	12,995,469	4,572,499	68,669,038	21,811,710	209.5	184.2	214.8
Wages.....	892,890,541	386,514,147	210,289,473	92,169,906	682,601,068	294,344,241	131.0	128.2	131.9
Contract work.....	4,413,811	3,911,186	1,567,845	1,701,514	2,845,966	2,209,672	12.9	-8.4	29.2
Supplies and materials.....	202,170,927	64,008,440	59,738,376	23,472,809	142,432,551	40,530,631	215.9	154.5	251.4
Fuel and purchased power.....	50,483,121	10,703,173	13,306,952	3,189,279	37,177,169	7,513,894	371.7	317.2	394.8
Royalties and rents.....	34,061,654	20,063,227	11,766,598	7,969,785	22,295,056	12,093,442	69.8	47.6	84.4
Taxes.....	48,768,869	7,163,693	14,060,963	2,677,853	34,707,396	4,485,840	580.8	426.1	673.7
Value of all products.....	1,510,061,707	577,142,935	364,064,142	148,967,894	1,145,977,565	428,185,041	161.6	144.4	167.6

<sup>1</sup> Statistics for bituminous-coal mining are not strictly comparable owing to the fact that in 1909 the statistics relating to the manufacture of coke at the mines are included.  
<sup>2</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.  
<sup>3</sup> Includes statistics for 3 enterprises in Colorado and New Mexico, classified as anthracite at the census of 1909.  
<sup>4</sup> Exclusive of \$433,318, cost of coal purchased for resale by anthracite enterprises.

Production of coal: 1829 to 1919.—The progress of the coal-mining industry is best measured by the production of coal during successive periods. In Table 8 the production of coal, classified as anthracite and bituminous coal, is shown by decades from 1829 to 1889 and annually from 1889 to 1919. The table is compiled from the reports of the United States Geological Survey.<sup>1</sup> The data presented in the table are also shown graphically in Diagram 1 which shows by length of bars the relative importance of anthracite and bituminous coal production in each census year, and in Diagram 2, page 259, which indicates by curves the annual production of anthracite and bituminous coal from 1889 to 1919.

DIAGRAM 1.—COMPARATIVE PRODUCTION, ANTHRACITE AND BITUMINOUS COAL, BY DECADES: 1829 TO 1919.



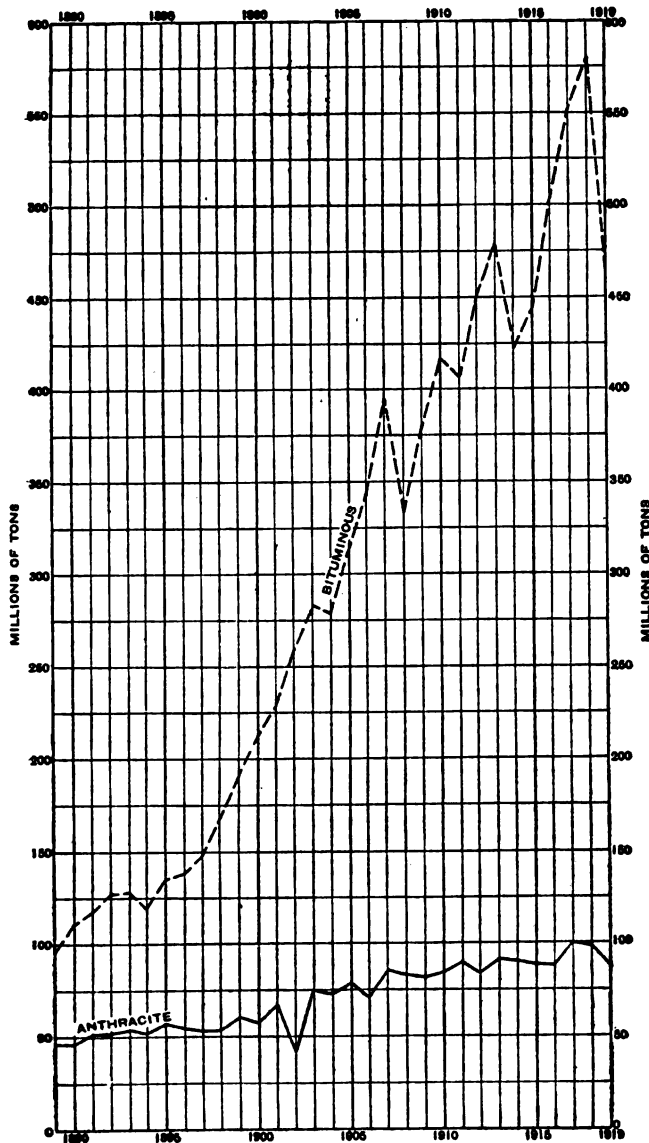
<sup>1</sup> Mineral Resources of the United States.

TABLE 8.—PRODUCTION OF COAL: 1829 TO 1919.<sup>1</sup>

YEAR.	Total (tons, 2,000 pounds).	Anthracite (tons, 2,000 pounds).	Bituminous (tons, 2,000 pounds).
1829.....	240,066	138,086	102,000
1839.....	1,590,390	1,008,322	552,038
1849.....	6,443,831	3,995,334	2,453,497
1859.....	15,633,175	9,619,771	6,013,404
1869.....	32,904,360	17,063,134	15,821,226
1879.....	65,105,799	30,207,793	37,898,006
1889.....	141,229,513	45,546,970	95,682,543
1890.....	157,770,968	46,468,641	111,302,322
1891.....	168,566,669	50,665,431	117,901,238
1892.....	176,326,071	52,472,504	123,853,567
1893.....	182,332,774	53,967,543	128,365,231
1894.....	170,741,526	51,921,121	118,820,405
1895.....	193,117,530	57,999,337	135,118,193
1896.....	191,986,357	54,346,081	137,640,276
1897.....	200,229,199	52,611,690	147,617,519
1898.....	219,976,267	53,352,644	166,623,623
1899.....	253,741,192	60,418,005	193,323,187
1900.....	269,684,027	57,367,915	212,316,112
1901.....	298,299,816	67,471,667	225,828,149
1902.....	301,590,439	41,373,595	260,216,844
1903.....	357,356,416	74,607,068	282,749,348
1904.....	351,816,398	73,156,709	278,659,689
1905.....	392,722,635	77,659,850	315,062,785
1906.....	414,157,278	71,282,411	342,874,867
1907.....	480,363,424	85,604,312	394,759,112
1908.....	415,842,698	83,268,754	332,573,944
1909.....	460,814,616	81,070,359	379,744,257
1910.....	501,596,378	84,485,236	417,111,142
1911.....	496,371,180	90,464,067	405,907,089
1912.....	534,466,561	84,361,598	450,104,962
1913.....	569,980,229	91,524,922	478,455,307
1914.....	513,525,477	90,821,507	422,703,970
1915.....	531,619,487	88,995,061	442,624,426
1916.....	590,066,175	87,578,498	502,519,683
1917.....	651,402,374	99,611,811	551,790,563
1918.....	678,211,904	98,826,084	579,385,820
1919.....	563,952,269	88,062,201	465,890,068

<sup>1</sup> From the reports of the United States Geological Survey which include Alaska.

DIAGRAM 2.—ANNUAL PRODUCTION, ANTHRACITE AND BITUMINOUS COAL: 1889 TO 1919.



The coal-mining industry has progressed by large advances from decade to decade, but although the gain in production each decade, beginning 1829, was increasingly larger as measured in absolute numbers up to 1909, the per cent of increase has declined between decades from 550 per cent in 1839 as compared with 1829, and over 300 per cent in 1849 as compared with 1839, to 100 per cent in 1889 as compared with 1879, and 80 per cent in 1909 as compared with 1899. The production in 1919 was abnormally low on account of the great strike of bituminous coal miners, and therefore the falling off to 20 per cent increase in 1919 as compared with 1909 is not properly indicative of progress during the last decade. With normal production in the year 1919 the increase compared with 1909 would probably have been at least 40 per cent.

The curves showing annual production since 1889 indicate clearly the years of depression in coal mining.

The most notable sags on the curves for bituminous coal are for the years 1908, 1914, and 1919. The first two were during and following periods of panic and severe depression in business generally. In 1914 the decrease in bituminous coal production was in part a reaction from the hitherto unprecedented rates of production in 1912 and 1913, and was also due to depression in the iron and steel industry and to labor difficulties in some coal fields. Apparently the beginning of the European war did not exert a marked effect upon coal production in the United States in 1914. In 1919 the decline of approximately 125,000,000 tons came as the result of both the cessation of the tremendous rate of production attained in 1918 because of the war's demands and the great strike in November and December.

Anthracite is used largely in heating houses, therefore, the amount of its output depends more on labor conditions and on temperature and weather than on general business conditions. There has, moreover, been no intimate affiliation between labor in the anthracite fields and labor in the bituminous coal fields, and therefore the two curves do not show the same trends throughout their length, the most marked departure between them being the decline due to the great anthracite coal strike in 1902. The anthracite curve is peculiar in that it shows almost regularly alternate changes in trend which reflect the difficulties of the biennial readjustment of labor conditions which characterized this industry.

Table 8 also serves to show the change in relative importance of anthracite and bituminous coal production. In the early years of the coal-mining industry in the United States and until after 1869 more anthracite was produced and used than bituminous coal. By 1879 bituminous coal production had surpassed the anthracite output and was about 56 per cent of the total coal production, and since that time the proportion of bituminous coal has increased to approximately 85 per cent in each of the last four years covered by the table.

Population and coal production: 1829 to 1919.—Table 9 compares the growth of population with the increase in the output of coal during each decade from 1829 to 1919. This table shows an enormous increase in production of coal as compared with the increase in population in the early decades, but it also shows that the per cent of increase in the production of coal has been decreasing more rapidly than the per cent of increase in population. In 1829 only about one-fiftieth of a ton of coal was produced per capita as compared with five and one-quarter tons 90 years later, and, whereas the population of the country in 1919 was approximately 8 times the population of 1829, the production of coal was more than 2,000 times that in 1829, 350 times that of 1839, and 85 times that in 1849.

TABLE 9.—COMPARATIVE GROWTH OF POPULATION AND COAL PRODUCTION.

YEAR.	Population.	Per cent of increase over preceding census.	Coal produced <sup>2</sup> (tons, 2,000 pounds).	Per cent of increase over preceding census.	Tons per capita.
1820.....	12,866,020	.....	240,096	.....	0.02
1830.....	17,089,453	32.7	1,590,360	549.9	0.09
1840.....	23,191,876	35.9	6,448,831	313.3	0.28
1850.....	31,443,321	35.6	15,033,175	142.4	0.50
1860.....	38,568,371	22.6	32,904,360	110.5	0.85
1870.....	50,155,783	30.1	68,105,799	107.0	1.36
1880.....	62,947,714	25.5	141,229,513	107.4	2.24
1890.....	75,904,575	20.7	253,741,192	79.7	3.34
1900.....	91,972,266	21.0	460,814,616	81.6	5.01
1919.....	106,710,620	14.9	553,952,259	20.2	5.24

<sup>1</sup> Population is for the year following that covered by the statistics for coal.  
<sup>2</sup> From the reports of the United States Geological Survey, which include Alaska.

In the recent periods, when the quantity of coal mined had reached large proportions, the increase in coal production was rapid and was approxi-

mately four times as large as the increase in population except in the last decade reported. For this decade, 1909 to 1919, it was much less, but if the maximum recorded production, that for 1918, is used in computation, the increase in coal production was three times the increase in population.

Comparative production by regions: 1919 and 1909.—Table 10 gives the quantity and value of coal produced by regions and for states in 1919 and 1909. The total increase of 90 million tons in the production of coal in 1919 as compared with 1909 comprises an increase of approximately 7 million tons of Pennsylvania anthracite and 83 million tons of bituminous coal. In bituminous coal the increase was chiefly in the Appalachian Regions and amounted to 70 million tons, or about 85 per cent of the total increase. The table also shows for regions and states the increases in the average values per ton of coal, which reflect the general price increases during the decade.

TABLE 10.—COMPARATIVE COAL PRODUCTION: 1919 AND 1909.

REGION AND STATE.	COAL PRODUCED.							
	Quantity (tons, 2,000 pounds).			Value.				
				Total.			Average per ton.	
	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909
Expressed in thousands.				Expressed in thousands.				
UNITED STATES.....	548,696	457,634	19.8	\$1,508,268	\$550,514	174.0	\$2.75	\$1.20
Anthracite (Pennsylvania).....	88,170	80,881	9.0	363,945	148,958	144.3	4.13	1.84
Bituminous coal.....	460,426	376,753	22.1	1,144,323	401,556	185.0	2.49	1.07
APPALACHIAN REGIONS.....	325,089	255,481	27.2	796,508	242,574	228.4	2.45	0.95
Pennsylvania.....	150,080	137,305	9.3	362,171	129,513	179.6	2.41	0.94
West Virginia.....	77,617	51,496	50.7	192,953	44,344	335.1	2.49	0.86
Ohio.....	38,141	27,519	27.7	77,778	27,274	183.2	2.21	0.90
Kentucky <sup>2</sup> .....	29,426	10,861	178.6	72,348	9,699	627.9	2.46	0.94
Alabama.....	15,411	13,677	12.7	45,324	16,174	180.3	2.94	1.18
Virginia.....	9,335	4,949	86.6	23,761	4,336	448.0	2.55	0.88
Tennessee.....	5,122	5,973	-14.1	13,982	6,549	112.2	2.72	1.19
Maryland.....	2,997	4,001	-25.1	8,196	4,445	84.4	2.78	1.11
MICHIGAN REGION.....	996	1,772	-43.8	3,862	3,175	21.6	3.88	1.79
EASTERN INTERIOR REGION.....	80,836	65,298	23.8	184,154	67,985	170.9	2.28	1.04
Illinois.....	60,331	50,570	19.3	133,701	53,000	161.7	2.30	1.05
Indiana.....	20,505	14,728	39.3	45,453	14,985	208.3	2.22	1.02
WESTERN INTERIOR REGION.....	14,462	18,219	-20.6	44,711	28,395	57.5	3.09	1.66
Iowa.....	5,474	7,726	-29.1	16,868	12,679	33.2	3.09	1.64
Kansas.....	5,204	6,896	-24.5	15,745	9,896	60.1	3.08	1.43
Missouri.....	3,784	3,597	5.2	12,073	5,890	105.3	3.19	1.63
SOUTHERN INTERIOR REGION.....	6,811	7,312	-6.9	24,071	12,828	87.6	3.53	1.75
Oklahoma.....	3,788	3,113	21.5	14,461	6,194	133.8	3.82	1.99
Arkansas.....	1,440	2,374	-39.3	5,239	3,509	50.7	3.67	1.48
Texas.....	1,588	1,825	-13.0	4,321	3,135	37.8	2.72	1.72
NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS.....	32,140	28,568	12.5	90,698	46,954	93.2	2.82	1.64
Colorado.....	10,183	10,706	-4.9	28,328	14,246	96.8	2.78	1.38
Wyoming.....	7,212	6,296	-14.6	15,723	9,721	92.6	2.60	1.54
Utah.....	4,568	2,260	103.2	12,628	4,112	207.0	2.75	1.32
Washington.....	2,967	3,601	-17.1	10,630	9,140	16.8	3.58	2.54
New Mexico.....	3,185	2,800	13.8	9,983	4,065	143.2	3.10	1.45
Montana.....	3,212	2,543	26.3	8,550	5,117	67.1	2.96	2.01
North Dakota.....	768	364	111.0	1,926	568	242.1	2.51	1.55
All other states <sup>3</sup> .....	92	306	-70.1	320	1,748	-81.2	3.53	5.69

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes 87,000 tons of coal, valued at \$222,577, for mines in Colorado and New Mexico which were classified as anthracite enterprises at the census of 1909.

<sup>3</sup> Includes the western Kentucky portion of the Eastern Interior Region for which separate figures are not available for 1909.

<sup>4</sup> Includes value of coke made at mines not included in total for the United States, to avoid disclosure of individual operations.

<sup>5</sup> Includes California, Georgia, Idaho, North Carolina, Oregon, and South Dakota for 1919; and California, Georgia, Idaho, and Oregon for 1909.

Comparative production per mine and per wage earner: 1849 to 1919.—Table 11 gives the average production of coal per mine and per wage earner at each census of mines since 1849. It shows, for the industry as a whole, regular progress in productivity

per wage earner during the last half century. The decline in the average per mine and per wage earner for anthracite coal in 1902 and per mine for bituminous coal in 1919 was due to the great strikes in those years.

TABLE 11.—AVERAGE COAL PRODUCTION PER MINE, AND PER WAGE EARNER, AT EACH CENSUS OF MINES, 1849 TO 1919.

	1919	1909	1902	1899	1879	1909	1849	1849
All coal: <sup>1</sup>								
Quantity produced per mine (tons, 2,000 pounds).....	63,209	71,821	50,383	53,578	21,701	20,966	23,045	12,539
Quantity produced per wage earner (tons, 2,000 pounds).....	790	672	565	476	422	347	393	426
Anthracite (Pennsylvania): <sup>1</sup>								
Quantity produced per mine (tons, 2,000 pounds).....	231,841	226,224	128,873	131,793				
Quantity produced per wage earner (tons, 2,000 pounds).....	592	478	279	363				
Bituminous coal:								
Quantity produced per mine (tons, 2,000 pounds).....	55,594	62,658	46,040	43,115				
Quantity produced per wage earner (tons, 2,000 pounds).....	844	736	708	553				

<sup>1</sup> Exclusive of dredges and of culm washeries operated independently of mines in 1919.—Based on number of "collieries" and estimated average number of wage earners in them for 1909.

<sup>2</sup> Exclusive of local mines.

<sup>3</sup> See Special Reports of the Census, 1902, tabular statement, p. 669, and p. 666 for explanation of the number of wage earners used in obtaining this average.

Comparative statistics for power used: 1919 and 1909.—Table 12 presents statistics of power equipment used by producing anthracite-mining enterprises and by producing bituminous coal-mining enterprises in the United States and separately by regions, for 1919 and 1909. The statistics for 1909

include the power equipment used in coke manufacture at the coal mines, which, however, was quite insignificant in amount. The aggregate horsepower used in anthracite mines increased 33.1 per cent between 1909 and 1919, and that used in bituminous coal mines increased 75.5 per cent in the same period.

TABLE 12.—COMPARATIVE STATISTICS, POWER USED, PRODUCING ENTERPRISES: 1919 AND 1909.

REGION.	Census year.	Aggregate horsepower.	PRIME MOVERS.						EQUIPMENT OPERATED BY PURCHASED POWER.			ELECTRIC MOTORS RUN BY CURRENT GENERATED BY THE ENTERPRISE REPORTING.		
			Total horsepower.	Steam engines.		Internal-combustion engines.		Water wheels and turbines.		Electric motors.		Other (horsepower).	Number.	Horsepower.
				Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.			
UNITED STATES.....	1919	3,055,195	2,166,024	14,833	2,143,447	1,319	22,503	9	74	23,067	838,824	347	24,945	893,064
	1909	1,904,154	1,877,450	19,318	1,874,001	374	3,101	9	348	26,873	26,704		10,869	375,336
		60.4	15.4	-23.2	14.4	252.7	625.7		-78.7	2,545.3	3,228.4		123.6	137.9
Anthracite (Pennsylvania).....	1919	899,783	782,090	5,343	780,806	73	1,284			1,831	117,693		3,801	185,723
	1909	676,128	674,718	7,567	673,946	25	772			32	1,410		1,152	45,088
		33.1	15.9	-23.4	15.9		66.3			8,247.0			223.9	308.9
Bituminous coal.....	1919	2,155,412	1,383,934	9,490	1,382,641	1,246	21,219	9	74	21,196	771,131	347	21,044	707,241
	1909	1,228,026	1,202,732	11,751	1,200,055	349	2,329	9	348	840	25,294		9,717	329,288
		75.5	15.1	-19.2	13.5	257.0	811.1		-78.7	2,422.1	2,943.7		116.6	114.8
Northern and Middle Appalachian Regions.....	1919	1,315,455	755,966	4,293	741,110	685	14,876			15,851	559,227	242	13,372	458,576
	1909	744,516	725,231	6,148	724,234	119	987	2	10	667	19,285		7,853	259,132
		76.7	4.2	-30.2	2.3	475.6	1,407.2			2,276.5	2,793.8		76.6	77.6
Southern Appalachian Region.....	1919	101,326	63,304	465	62,079	55	1,151	9	74	868	38,022		710	27,385
	1909	54,494	53,831	517	53,744	10	87			15	663		366	11,584
		85.9	17.6	-10.1	15.5					5,634.8			94.0	136.4
Michigan Region.....	1919	6,394	6,189	50	6,189					10	695		179	5,285
	1909	7,912	7,912	94	7,900	2	12						47	2,162
		-13.0	-21.8		-21.7									144.4
Eastern Interior Region.....	1919	382,044	321,310	2,590	319,771	167	1,539			1,507	60,734		4,635	157,642
	1909	212,084	211,755	2,564	211,180	90	575			20	329		485	19,641
		80.1	51.7	1.0	51.4		167.7			18,360.2			855.7	702.6
Western Interior Region.....	1919	77,942	60,654	938	58,786	213	1,968			661	17,283	5	234	8,283
	1909	50,723	50,502	922	49,989	118	529	1	4	12	221		125	4,377
		53.7	20.1	1.7	17.6	80.5	263.1			7,720.4			87.2	30.2
Southern Interior Region.....	1919	57,647	46,341	488	45,180	60	1,161			340	11,306		192	6,543
	1909	43,041	42,805	509	42,606					9	435		51	3,446
		33.9	8.8	-4.1	6.0					2,499.1				89.9
Northern Great Plains, Rocky Mountain, and Pacific Coast Regions.....	1919	214,114	130,150	666	129,526	66	624			1,949	83,864	100	1,222	43,623
	1909	115,256	110,895	997	110,422	10	139	6	334	117	4,361		790	28,968
		85.8	17.4	-33.2	17.3		348.9			1,565.8	1,823.0		54.7	50.7

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

<sup>2</sup> Includes 12 steam engines of 625 horsepower reported for 3 anthracite mines in Colorado and New Mexico classified as anthracite enterprises at the census of 1909.

Most of the power used in coal mines in 1909 was that of steam engines, but in 1919 electric motors operated by purchased current furnished approximately 30 per cent of the power used in all coal mines, 13 per cent for anthracite mines and 36 per cent for bituminous coal mines. The increased relative importance of electrical equipment in coal mining is shown by the fact that the horsepower of steam engines increased only 15.9 per cent in the anthracite mines and 13.5 per cent in the bituminous coal mines, whereas the horsepower of electric motors operated by purchased current increased more than 8,000 per cent for anthracite mines and approximately 3,000 per cent for bituminous coal mines. Very notable increase is also shown in the use of internal-combustion engines, particularly in bituminous coal mining, and in the use of electric motors operated by current generated by the enterprise reporting them. These increases are much less, however, than the increase shown for electric motors operated by purchased current. Similar changes marking great progress toward electrification of the coal-mining industry is shown for each of the bituminous coal-mining regions. Although the total horsepower of internal-combustion engines increased sixfold during the decade, the proportion of power furnished by them is still only a very small fraction of the total horsepower used. In 1909 most of the electric motors used by all coal mines in the United States were run by current generated by the mine operators themselves. This was also the case for anthracite mines in

1919 (although the number of electric motors operated by purchased current had increased from less than 3 per cent of all electric motors to approximately 35 per cent of the total number); whereas in bituminous-coal mining in 1919 in the United States as a whole, and in each of the mining regions except in Michigan, and the Eastern Interior Region, the number of electric motors operated by purchased current exceeded the number run by current generated by the mine operator. In the exceptional fields, furthermore, the proportion of motors of the first class increased very greatly.

Table 13 shows for 1919 and 1909 for selected states by mining regions for producing enterprises in the bituminous coal-mining industry, the horsepower used per mine, per wage earner employed, and per 1,000 tons of coal produced. For the United States as a whole the total power used increased about 75 per cent, whereas the power used per mine increased from 204 to 260, or 27 per cent; per wage earner from 2.4 to 3.9, or 62 per cent; and per 1,000 tons of coal produced from 3.3 to 4.7, or 42 per cent. In the main the individual states show considerable increase in horsepower used per mine, but there was small decrease which marked no essential change in Maryland, Pennsylvania, and North Dakota. The increase in horsepower per wage earner and per ton of coal mined was general and relatively large in most of the states, North Dakota alone showing decrease for both averages.

TABLE 13.—POWER USED BY BITUMINOUS COAL PRODUCING ENTERPRISES, PER MINE, PER WAGE EARNER, AND PER 1,000 TONS OF COAL PRODUCED: 1919 AND 1909.

REGION AND STATE.	Census year.	Number of mines.	Wage earners (average number).	Coal produced (tons, 2,000 pounds) (expressed in thousands).	POWER USED (AGGREGATE HORSEPOWER).			
					Total.	Per mine.	Per wage earner.	Per 1,000 tons of coal produced.
UNITED STATES.....	1919 1909	8,282 6,016	545,798 511,915	460,426 376,953	2,155,412 1,228,026	260 204	3.9 2.4	4.7 3.3
APPALACHIAN REGION:								
Alabama.....	1919 1909	260 203	24,648 21,635	15,411 13,677	97,089 54,064	373 266	3.9 2.5	6.3 4.0
Kentucky <sup>1</sup> .....	1919 1909	742 310	39,769 16,471	29,426 10,561	126,804 44,314	171 143	3.2 2.7	4.2 4.2
Maryland.....	1919 1909	92 70	4,826 5,558	2,997 4,001	12,470 9,845	136 141	2.6 1.8	4.2 2.5
Ohio.....	1919 1909	898 640	40,452 39,678	35,141 27,519	136,145 97,422	152 152	3.4 2.5	3.9 3.5
Pennsylvania.....	1919 1909	2,584 1,509	154,992 168,166	150,030 137,306	658,963 404,654	255 268	4.3 2.4	4.4 2.9
Tennessee.....	1919 1909	143 142	9,556 10,519	5,132 5,973	22,946 16,075	161 113	2.4 1.5	4.5 2.7
Virginia.....	1919 1909	118 85	11,215 9,084	9,335 4,949	41,630 16,630	353 196	3.7 1.8	4.5 3.4
West Virginia.....	1919 1909	1,267 661	87,095 65,228	77,617 51,496	355,479 156,576	276 235	4.1 2.4	4.6 3.0
MICHIGAN REGION.....	1919 1909	14 28	1,654 3,403	996 1,772	6,884 7,912	492 283	4.2 2.3	6.9 4.5
EASTERN INTERIOR REGION:								
Illinois.....	1919 1909	499 631	73,780 64,942	60,331 50,570	247,142 166,174	495 263	3.3 2.6	4.1 3.3
Indiana.....	1919 1909	317 322	24,479 19,070	20,505 14,723	99,585 45,910	314 143	4.1 2.4	4.9 3.1

<sup>1</sup> Includes statistics for anthracite mines in Colorado and New Mexico classified as anthracite enterprises at the census of 1909.

<sup>2</sup> Includes the Western Kentucky portion of the Eastern Interior Region for which separate figures are not available for 1909.

TABLE 13.—POWER USED BY BITUMINOUS COAL PRODUCING ENTERPRISES, PER MINE, PER WAGE EARNER, AND PER 1,000 TONS OF COAL PRODUCED: 1919 AND 1909—Continued.

REGION AND STATE.	Census year.	Number of mines.	Wage earners (average number).	Coal produced (tons, 2,000 pounds) (expressed in thousands).	POWER USED (AGGREGATE HORSEPOWER).			
					Total.	Per mine.	Per wage earner.	Per 1,000 tons of coal produced.
<b>WESTERN INTERIOR REGION:</b>								
Iowa.....	1919	185	10,584	5,474	20,123	134	2.5	4.8
	1909	311	15,361	7,726	19,118	62	1.2	2.5
Kansas.....	1919	166	8,084	5,204	23,434	141	2.9	4.5
	1909	202	11,666	6,896	19,707	96	1.7	2.9
Missouri.....	1919	196	7,285	3,784	28,385	145	3.9	7.5
	1909	220	7,594	3,597	11,898	54	1.6	3.3
<b>SOUTHERN INTERIOR REGION:</b>								
Arkansas.....	1919	91	2,787	1,440	15,027	165	5.4	10.4
	1909	69	4,250	2,374	10,608	152	2.5	4.4
Oklahoma.....	1919	131	7,040	3,783	36,483	278	5.2	9.6
	1909	104	7,434	3,113	26,316	253	3.5	8.5
Texas.....	1919	42	2,711	1,588	6,137	146	2.3	3.9
	1909	47	4,024	1,825	6,217	132	1.5	3.4
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS:</b>								
Colorado.....	1919	164	11,252	10,183	63,016	384	5.6	6.2
	1909	157	13,334	10,705	34,410	219	2.6	3.2
Montana.....	1919	76	3,797	3,212	27,077	356	7.1	8.4
	1909	65	4,043	2,543	16,173	249	4.0	6.4
New Mexico.....	1919	34	3,564	3,185	18,063	531	5.1	5.7
	1909	29	3,629	2,800	9,687	334	2.7	3.5
North Dakota.....	1919	79	774	768	2,087	26	2.6	2.7
	1909	53	556	364	2,026	38	3.6	5.5
Utah.....	1919	34	3,647	4,593	24,029	707	6.6	8.2
	1909	22	2,683	2,260	6,929	315	2.6	3.1
Washington.....	1919	43	4,413	2,987	32,190	740	7.3	10.8
	1909	54	5,833	3,601	16,812	311	2.9	4.7
Wyoming.....	1919	65	7,091	7,212	47,075	724	6.6	6.5
	1909	65	7,134	6,295	28,071	432	3.9	4.5
All other states <sup>1</sup> .....	1919	12	303	92	1,249	104	4.1	13.6
	1909	17	715	308	1,559	92	2.2	5.1

<sup>1</sup> Includes California, Georgia, Idaho, North Carolina, Oregon, and South Dakota for 1919, and California, Georgia, Idaho, and Oregon for 1909.

**CHARACTER OF ORGANIZATION.**

The character of organizations operating producing anthracite and bituminous coal-mining enterprises is shown for the United States as a whole and by states in Table 14. Approximately two-thirds of the coal-mining enterprises in the United States were operated by corporations and these corporations employed 95.1 per cent of the total average number of wage earners and reported 95.4 per cent of the total value of products of the industry. In most of the states similar ratios held for the average number of wage earners

employed and the value of products reported by corporations, although the per cent which the number of corporations was of the total number of operating organizations, varied from 100 per cent in Michigan to 24.1 per cent in North Dakota. Among the other forms of organization individuals outnumbered firms or partnerships in the bituminous coal-mining industry, but in anthracite mining, firms or partnerships were more numerous and the enterprises in this class of organization were larger, as measured by wage earners and value of products, than those operated by individuals.

MINES AND QUARRIES.

TABLE 14.—CHARACTER OF ORGANIZATION OF PRODUCING ENTERPRISES, FOR SELECTED STATES: 1919.

STATE.	ALL CLASSES.			CORPORATION.							INDIVIDUAL.			
	Number of enterprises.	Average number of wage earners.	Value of products.	Enterprises.		Wage earners.		Value of products.			Enterprises.		Wage earners.	
				Number.	Per cent of total.	Average number.	Per cent of total.	Amount.	Per cent of total.	Per enterprise.	Number.	Per cent of total.	Average number.	Per cent of total.
UNITED STATES.....	6,890	693,170	\$1,510,061,707	4,495	65.2	659,307	95.1	\$1,440,333,781	95.4	\$320,430	1,218	17.7	14,275	2.1
Anthracite (Pennsylvania).....	254	147,372	364,084,142	170	66.9	143,615	97.5	355,328,907	97.6	2,090,170	37	14.6	431	0.3
Bituminous coal.....	6,636	545,798	1,145,977,565	4,325	65.2	515,692	94.5	1,085,004,874	94.7	250,868	1,181	17.8	13,844	2.5
Pennsylvania.....	1,938	154,992	363,973,952	1,000	51.6	139,535	90.0	328,381,965	90.5	328,382	487	25.1	7,706	5.0
West Virginia.....	926	87,095	198,108,343	904	96.8	85,256	97.9	189,232,443	95.0	235,364	53	6.7	475	0.5
Illinois.....	447	73,790	138,767,835	330	71.6	71,763	97.3	135,182,771	97.4	424,446	65	14.5	996	1.3
Ohio.....	788	40,452	77,988,602	453	57.5	37,798	93.4	73,116,226	93.8	161,404	172	21.8	1,118	2.8
Kentucky.....	635	39,789	72,432,840	472	74.3	38,597	97.1	70,608,056	97.5	149,563	98	15.1	536	1.3
Indiana.....	295	24,479	45,492,736	202	68.5	23,828	97.3	44,226,927	97.2	218,945	46	15.6	284	1.2
Alabama.....	188	24,648	45,359,441	168	89.4	23,786	96.5	43,997,017	97.0	261,667	11	5.9	273	1.1
Colorado.....	161	11,252	28,342,196	132	82.0	11,013	97.9	27,817,977	98.2	210,742	10	6.2	74	0.7
Virginia.....	108	11,215	23,768,440	88	81.5	11,032	98.4	23,457,245	98.7	296,560	9	8.3	89	0.8
Wyoming.....	46	7,091	18,728,451	37	80.4	7,052	99.4	18,641,184	99.6	503,816	5	10.9	10	0.1
Iowa.....	167	10,584	16,908,358	84	50.3	9,746	92.1	15,610,232	92.3	185,836	27	16.2	394	3.7
Kansas.....	129	8,064	15,748,535	63	48.8	6,925	85.7	13,645,327	86.6	216,661	30	23.3	652	8.1
Oklahoma.....	94	7,040	14,477,317	75	79.8	6,777	96.3	13,996,627	96.6	189,488	12	12.8	154	2.2
Tennessee.....	107	9,556	14,024,432	85	79.4	9,330	97.6	13,733,409	97.9	161,570	10	9.3	81	0.8
Utah.....	27	3,647	12,632,035	18	66.7	3,619	99.2	12,554,081	99.4	697,449	3	11.1	9	0.2
Missouri.....	179	7,285	12,077,845	92	51.4	6,399	87.8	10,756,523	89.1	116,919	43	24.0	361	5.0
Washington.....	35	4,413	10,737,656	31	88.6	4,361	98.8	10,645,391	99.1	343,400	.....	.....	.....	.....
New Mexico.....	21	3,564	9,905,541	14	66.7	3,444	96.6	9,669,144	97.6	690,653	17	33.3	120	3.4
Montana.....	67	3,797	8,591,211	29	43.3	3,541	95.9	8,217,759	95.7	283,371	21	31.3	84	2.2
Maryland.....	58	4,826	8,195,667	44	75.9	4,408	91.3	7,578,229	92.5	172,232	8	13.8	52	1.1
Arkansas.....	85	2,787	5,292,274	49	57.6	2,259	81.1	4,314,407	81.5	88,049	15	17.6	194	7.0
Texas.....	33	2,711	4,322,100	29	87.9	2,615	96.5	4,205,450	97.3	145,016	4	12.1	96	3.5
Michigan.....	11	1,654	3,861,874	11	100.0	1,654	100.0	3,861,874	100.0	351,079	.....	.....	.....	.....
North Dakota.....	79	774	1,927,304	19	24.1	571	73.8	1,276,196	66.3	67,273	48	60.8	180	20.7

STATE.	INDIVIDUAL—con.			FIRM.						ALL OTHER.							
	Value of products.			Enterprises.		Wage earners.		Value of products.			Enterprises.		Wage earners.		Value of products.		
	Amount.	Per cent of total.	Per enterprise.	Number.	Per cent of total.	Average number.	Per cent of total.	Amount.	Per cent of total.	Per enterprise.	Number.	Per cent of total.	Average number.	Per cent of total.	Amount.	Per cent of total.	Per enterprise.
UNITED STATES.....	\$29,306,406	1.9	\$24,061	1,137	16.5	17,726	2.6	\$36,841,111	2.4	\$32,402	40	0.6	1,862	0.3	\$3,580,409	0.2	\$89,510
Anthracite (Pennsylvania).....	962,441	0.3	26,012	42	16.5	2,879	2.0	6,741,024	1.9	160,501	5	2.0	447	0.3	1,061,770	0.3	210,354
Bituminous coal.....	28,343,965	2.5	24,000	1,095	16.5	14,847	2.7	30,100,087	2.6	27,489	35	0.5	1,415	0.3	2,528,639	0.2	72,247
Pennsylvania.....	17,487,290	4.8	35,908	440	22.7	6,870	4.4	15,352,035	4.2	34,891	11	0.6	881	0.6	1,752,662	0.5	159,333
West Virginia.....	1,096,619	0.6	20,672	69	7.5	1,364	1.6	2,780,281	1.4	40,294	.....	.....	.....	.....	.....	.....	
Illinois.....	1,734,925	1.3	28,691	54	12.1	762	1.0	1,538,811	1.1	28,441	8	1.8	259	0.4	314,328	0.2	39,291
Ohio.....	2,006,691	2.6	11,678	163	20.7	1,536	3.8	2,863,685	3.7	17,569	.....	.....	.....	.....	.....	.....	
Kentucky.....	782,735	1.1	8,153	67	10.6	636	1.6	1,042,065	1.4	16,583	.....	.....	.....	.....	.....	.....	
Indiana.....	488,796	1.1	10,626	47	15.9	367	1.5	777,003	1.7	16,532	.....	.....	.....	.....	.....	.....	
Alabama.....	426,805	0.9	38,963	9	4.8	539	2.4	933,619	2.1	103,735	.....	.....	.....	.....	.....	.....	
Colorado.....	139,136	0.5	13,914	19	11.8	165	1.5	385,082	1.4	20,267	.....	.....	.....	.....	.....	.....	
Virginia.....	150,026	0.6	16,670	11	10.2	94	0.8	155,169	0.7	14,197	.....	.....	.....	.....	.....	.....	
Wyoming.....	30,478	0.2	6,066	4	8.7	29	0.4	51,789	0.3	12,947	.....	.....	.....	.....	.....	.....	
Iowa.....	504,025	3.0	18,668	56	33.5	444	4.2	789,101	4.7	14,091	.....	.....	.....	.....	.....	.....	
Kansas.....	1,250,429	7.9	41,681	32	24.8	396	4.9	720,976	4.6	22,531	4	3.1	111	1.4	133,803	0.8	33,451
Oklahoma.....	274,234	1.9	22,853	7	7.4	109	1.5	216,456	1.5	30,923	.....	.....	.....	.....	.....	.....	
Tennessee.....	96,097	0.7	9,610	12	11.2	145	1.5	194,926	1.4	16,244	.....	.....	.....	.....	.....	.....	
Utah.....	19,545	0.2	6,515	4	22.2	19	0.5	59,409	0.5	9,735	.....	.....	.....	.....	.....	.....	
Missouri.....	517,831	4.3	12,043	44	24.6	525	7.2	803,491	6.7	18,261	.....	.....	.....	.....	.....	.....	
Washington.....	.....	.....	.....	4	11.4	52	1.2	92,265	0.9	23,066	.....	.....	.....	.....	.....	.....	
New Mexico.....	1,226,397	2.4	39,771	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Montana.....	174,776	2.0	8,323	17	25.4	72	1.9	198,676	2.3	11,657	.....	.....	.....	.....	.....	.....	
Maryland.....	76,400	0.9	9,550	6	10.3	366	7.6	541,038	6.6	90,173	.....	.....	.....	.....	.....	.....	
Arkansas.....	282,405	5.3	18,827	21	24.7	334	12.0	696,462	13.1	33,117	.....	.....	.....	.....	.....	.....	
Texas.....	116,650	2.7	29,163	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Michigan.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
North Dakota.....	497,140	25.8	10,357	12	15.2	43	5.6	151,968	7.9	12,664	.....	.....	.....	.....	.....	.....	

<sup>1</sup> Includes number or amount for 2 firms.

<sup>2</sup> Includes number or amount for 1 firm and 1 other form of ownership.

<sup>3</sup> Includes number or amount for 1 other form of ownership.

<sup>4</sup> Includes number or amount for 2 other forms of ownership.

SCALE OF OPERATION.

Size of mines and enterprises.—Statistics relating to the scale of operation and production in coal mining are presented in two ways: First, based on the individual mines, and second, based on the enterprises. They might well also be presented in a third way—based on the activities of the individual operator—but at the census of 1919 it was impossible to consolidate, for the individual operators, the returns on their several enterprises so that statistics for 1919 can not be presented as they were at the census of 1909, showing the size of operation and scale of production as measured by the combined activities of each operator. Unfortunately, moreover, the fact that many operators rendered combined reports for several or for all of their mines—although of course stating the number of mines covered—instead of a separate report for each, made it impossible to completely classify individual mines according to wage earners employed, quantity or value of products, acreage operated, or other measure of operation. Therefore, only the average size of mines can be given based on the entire number of mines and the total number of wage earners, output, or acreage reported for each region, state, or other grouping.

Average size of coal mines.—The size of both anthracite and bituminous coal mines varies widely, but Table 15, in which the average number of wage earners per mine and the average output in tons per mine are given by regions and states, shows that viewed broadly the anthracite mines are much larger than bituminous coal mines. The average number of wage earners employed per mine in anthracite operations in 1919 was 392 and the output per mine 231,841 short tons, whereas the average for all bituminous coal mines covered by the census was only 66 wage earners and 55,594 tons, and would be much lower if the very small local mines not within the scope of the census were taken into consideration. In the Northern and Middle Appalachian Regions the average output and average number of wage earners employed in bituminous coal mines approximated the figures for all bituminous coal mines, and in the Michigan Region and the Eastern Interior Region the mines on the average were much larger, whereas in the Western and Southern Interior Regions they were smaller.

TABLE 15.—AVERAGE NUMBER OF WAGE EARNERS AND AVERAGE OUTPUT PER MINE, PRODUCING ENTERPRISES: 1919.

REGION AND STATE.	Number of mines.	WAGE EARNERS (AVERAGE NUMBER).		COAL PRODUCED (TONS, 2,000 POUNDS).	
		Total.	Per mine.	Total.	Per mine.
UNITED STATES.....	8,656	692,330	80	547,124,297	63,209
Anthracite <sup>1</sup> (Pennsylvania)...	374	146,552	392	85,708,461	231,841
Bituminous coal.....	8,282	545,798	66	460,425,836	55,594
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS.....</b>	<b>5,648</b>	<b>334,615</b>	<b>59</b>	<b>300,397,540</b>	<b>53,187</b>
Kentucky, eastern.....	552	28,789	52	21,150,836	38,317
Maryland.....	92	4,526	52	2,997,336	32,580
Ohio.....	896	40,453	45	35,140,541	39,133
Pennsylvania.....	2,584	154,922	60	150,029,837	58,051
Tennessee, northeastern.....	117	7,246	62	4,127,179	35,275
Virginia.....	116	11,215	95	9,334,788	79,108
West Virginia.....	1,287	87,095	68	77,617,115	60,309
<b>SOUTHERN APPALACHIAN REGION..</b>	<b>288</b>	<b>27,174</b>	<b>94</b>	<b>15,478,750</b>	<b>57,211</b>
Alabama.....	280	24,648	95	15,411,438	54,275
Georgia, North Carolina, and Tennessee, southeastern.....	28	2,526	90	1,065,314	38,047
<b>MICHIGAN REGION.....</b>	<b>14</b>	<b>1,654</b>	<b>118</b>	<b>995,999</b>	<b>71,143</b>
<b>EASTERN INTERIOR REGION.....</b>	<b>1,006</b>	<b>109,289</b>	<b>109</b>	<b>89,110,563</b>	<b>88,579</b>
Illinois.....	499	73,780	148	60,330,650	120,908
Indiana.....	317	24,479	77	20,504,791	64,684
Kentucky, western.....	190	10,980	58	8,275,122	43,553
<b>WESTERN INTERIOR REGION.....</b>	<b>557</b>	<b>25,953</b>	<b>47</b>	<b>14,462,351</b>	<b>25,965</b>
Iowa.....	195	10,584	54	5,474,249	28,073
Kansas.....	166	8,084	49	5,204,388	31,353
Missouri.....	196	7,285	37	3,783,714	19,305
<b>SOUTHERN INTERIOR REGION.....</b>	<b>264</b>	<b>12,538</b>	<b>47</b>	<b>6,811,527</b>	<b>25,801</b>
Arkansas.....	91	2,787	31	1,440,493	15,820
Oklahoma.....	131	7,040	54	3,782,794	28,876
Texas.....	42	2,711	65	1,588,240	37,815
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS.....</b>	<b>505</b>	<b>34,625</b>	<b>69</b>	<b>32,171,108</b>	<b>63,705</b>
Colorado.....	164	11,252	69	10,182,512	62,088
Montana.....	70	3,797	50	3,211,719	42,269
New Mexico.....	34	3,564	105	3,185,484	93,601
North Dakota.....	79	774	10	787,695	9,718
South Dakota.....	5	8	2	9,306	1,861
Utah.....	34	3,647	107	4,592,347	135,084
Washington.....	43	4,413	103	2,985,910	69,463
Wyoming.....	65	7,091	109	7,212,008	110,964
California, Idaho, and Oregon..	5	79	16	22,627	4,526

<sup>1</sup> Exclusive of data for enterprises operating only culm washeries and dredges.

Table 16 shows the average output in tons of coal for bituminous coal-mining enterprises using mining machines and for those operating without mining machines. For the United States as a whole the average output for mines using mining machines was approximately 95,000 tons per mine, which was four and one-half times the average per mine for enterprises operating without mining machines. The average output per mine for the regions shown in the table ranged from about 35,000 tons to 112,000 tons per mine for enterprises using mining machines, whereas the average per mine for enterprises without mining machines ranged from approximately 22,000 tons to nearly 40,000 tons. The maximum average output per



mine, for the states considered separately, was nearly 72,000 tons per mine in Washington for enterprises without mining machines, and 231,000 tons per mine in Utah for enterprises using mining machines.

TABLE 16.—AVERAGE OUTPUT OF BITUMINOUS COAL MINES FOR ENTERPRISES CLASSIFIED ACCORDING TO MINING METHOD, FOR SELECTED STATES: 1919.

REGION AND STATE.	ALL CLASSES.				ENTERPRISES WITHOUT MINING MACHINES.				ENTERPRISES USING MINING MACHINES.			
	Number of enterprises.	Number of mines.	Coal produced (tons, 2,000 pounds).		Number.	Number of mines.	Coal produced (tons, 2,000 pounds).		Number.	Number of mines.	Coal produced (tons, 2,000 pounds).	
			Total.	Per mine.			Total.	Per mine.			Total.	Per mine.
UNITED STATES.....	6,636	8,282	460,425,886	55,594	4,018	4,412	92,860,744	21,047	2,618	3,870	367,565,092	94,978
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS</b>	4,379	5,648	300,397,540	53,187	2,478	2,715	40,557,895	14,938	1,901	2,933	259,839,645	88,502
Pennsylvania.....	1,938	2,584	150,029,687	58,061	1,283	1,428	23,541,260	16,485	1,156	1,156	126,488,427	109,419
West Virginia.....	926	1,287	77,617,115	60,309	356	400	8,258,178	20,645	887	887	69,358,937	78,196
Ohio.....	788	898	35,140,541	39,132	396	408	2,364,135	5,866	402	496	32,776,406	66,215
Kentucky, eastern.....	469	552	21,150,896	38,317	284	287	2,941,059	10,248	185	265	18,209,887	68,716
Virginia.....	108	118	9,334,786	79,108	68	71	1,077,886	15,181	40	47	8,256,900	175,679
Tennessee, northeastern.....	92	117	4,127,179	35,275	54	64	808,912	14,046	38	53	3,228,267	60,911
Maryland.....	58	92	2,987,336	32,580	47	62	1,476,465	23,814	11	30	1,520,871	50,606
<b>SOUTHERN APPALACHIAN REGION</b>	205	288	16,476,750	57,211	154	198	7,849,013	39,641	51	90	8,627,737	95,864
Alabama.....	188	260	15,411,436	59,275	120	172	6,891,224	40,065	49	88	8,520,212	96,821
<b>EASTERN INTERIOR REGION</b>	908	1,006	89,110,563	88,579	568	580	21,744,405	37,490	240	426	67,366,158	158,137
Illinois.....	447	499	60,330,650	120,903	282	291	15,265,064	52,457	165	208	45,065,586	216,661
Indiana.....	295	317	20,504,791	64,684	175	176	5,297,464	30,099	120	141	15,207,327	107,858
Kentucky, western.....	166	190	8,275,122	43,553	111	113	1,181,877	10,459	55	77	7,093,245	92,120
<b>WESTERN INTERIOR REGION</b>	475	557	14,462,351	25,965	370	419	9,613,469	22,944	105	138	4,848,882	35,137
Iowa.....	167	195	5,474,249	28,073	144	160	3,340,940	20,881	28	35	2,133,309	60,922
Kansas.....	129	166	5,204,898	31,352	99	126	4,410,891	35,007	30	40	793,437	19,837
Missouri.....	179	196	3,783,714	19,306	127	138	1,861,638	13,997	52	63	1,922,076	30,509
<b>SOUTHERN INTERIOR REGION</b>	212	264	6,811,527	25,801	169	204	4,436,648	21,748	43	60	2,374,879	39,581
Oklahoma.....	94	131	3,782,794	28,876	58	78	1,551,651	19,393	36	53	2,231,143	42,097
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS</b>	448	505	32,171,106	63,705	278	295	8,646,434	29,810	168	210	23,524,672	112,022
Colorado.....	161	164	10,182,512	62,088	78	78	3,042,306	39,004	83	86	7,140,206	83,026
Wyoming.....	46	65	7,212,006	110,964	19	24	1,626,528	67,772	27	41	5,585,478	136,231
Utah.....	27	84	4,592,847	135,084	15	15	202,289	13,496	12	19	4,380,568	231,082
Montana.....	67	76	3,211,719	42,259	44	46	503,864	10,942	28	30	2,708,365	90,279
New Mexico.....	21	24	3,185,454	93,691	13	15	163,897	10,928	8	19	3,021,587	159,031
Washington.....	35	43	2,936,910	69,468	29	37	2,639,106	71,868	6	6	827,806	54,634
North Dakota.....	79	79	767,695	9,718	71	71	420,022	5,916	8	8	347,673	43,459
South Dakota.....	5	5	9,306	1,861	5	5	9,306	1,861				

Size of enterprises according to value of products.—Table 17 shows, for the United States as a whole and by states, the producing anthracite and bituminous coal-mining enterprises, classified according to the value of products per enterprise and gives the value of their products and the per cent distribution for each class. For the United States as a whole the small enterprises producing less than \$100,000 worth of products, and coming within the scope of the census, constituted two-thirds of all enterprises enumerated, but the value of their products was only about one-twelfth of the total value of products reported. On the other hand, only 3.4 per cent of the enterprises reported products valued at more than \$1,000,000

each, but these enterprises accounted for nearly half of the total value of products.

In anthracite mining less than one-half of the enterprises had products valued at less than \$100,000. Considering only collieries proper, that is, excluding dredges and independent culm washeries, only 17 per cent of the anthracite enterprises were in the classes producing less than \$100,000, and they produced less than five-tenths of 1 per cent of the value of products of the collieries. In contrast to this there were 65 anthracite enterprises operating collieries, or over two-fifths of all the colliery enterprises, which produced nine-tenths of the total value of products.

TABLE 17.—SIZE OF PRODUCING ENTERPRISES FOR SELECTED STATES, BY VALUE OR PRODUCTS: 1919.

STATE AND VALUE OF PRODUCT PER ENTERPRISE.	Number of enterprises.	Value of products.	PER CENT DISTRIBUTION.		STATE AND VALUE OF PRODUCT PER ENTERPRISE.	Number of enterprises.	Value of products.	PER CENT DISTRIBUTION.	
			Number of enterprises.	Value of products.				Number of enterprises.	Value of products.
<b>UNITED STATES</b> .....	6,890	\$1,510,061,707	100.0	100.0	<b>VIRGINIA</b> .....	108	\$23,763,440	100.0	100.0
Less than \$5,000.....	855	2,801,020	12.4	0.2	Less than \$5,000.....	10	43,436	9.3	0.2
\$5,000 to \$20,000.....	1,656	18,054,536	24.0	1.2	\$5,000 to \$20,000.....	32	383,082	29.6	1.4
\$20,000 to \$100,000.....	2,049	102,223,266	29.7	6.8	\$20,000 to \$100,000.....	25	1,353,402	23.1	5.7
\$100,000 to \$500,000.....	1,690	396,152,362	24.5	26.2	\$100,000 to \$500,000.....	25	5,326,337	23.1	22.4
\$500,000 to \$1,000,000.....	409	281,472,982	5.9	18.6	\$500,000 to \$1,000,000.....	10	7,305,891	9.3	30.7
\$1,000,000 to \$5,000,000.....	204	372,478,693	3.0	24.7	\$1,000,000 to \$5,000,000.....	6	9,401,292	5.6	39.6
\$5,000,000 and over.....	27	836,878,848	0.4	22.3	<b>WYOMING</b> .....	46	18,723,451	100.0	100.0
<b>ANTHRACITE (Pennsylvania)</b> .....	254	864,084,142	100.0	100.0	Less than \$5,000.....	5	16,409	10.9	0.1
Less than \$5,000.....	37	89,997	14.6	(1)	\$5,000 to \$20,000.....	6	64,307	13.0	0.3
\$5,000 to \$20,000.....	38	440,045	15.0	0.1	\$20,000 to \$100,000.....	5	232,170	10.9	1.2
\$20,000 to \$100,000.....	43	1,843,631	16.9	0.5	\$100,000 to \$500,000.....	13	3,787,123	28.3	20.1
\$100,000 to \$500,000.....	39	10,078,964	15.4	2.8	\$500,000 to \$1,000,000.....	13	9,142,565	28.3	48.8
\$500,000 to \$1,000,000.....	32	24,276,049	12.6	6.7	\$1,000,000 to \$5,000,000.....	4	6,510,877	8.7	29.4
\$1,000,000 to \$5,000,000.....	48	33,086,309	18.9	22.8	<b>IOWA</b> .....	167	16,903,358	100.0	100.0
\$5,000,000 and over.....	17	244,270,547	6.7	67.1	Less than \$5,000.....	24	89,976	14.4	0.5
<b>BITUMINOUS COAL</b> .....	6,636	1,145,977,585	100.0	100.0	\$5,000 to \$20,000.....	51	497,479	30.5	2.9
Less than \$5,000.....	818	2,711,023	12.3	0.2	\$20,000 to \$100,000.....	41	1,801,164	24.6	11.2
\$5,000 to \$20,000.....	1,618	17,614,491	24.4	1.5	\$100,000 to \$500,000.....	45	9,475,093	26.9	56.1
\$20,000 to \$100,000.....	2,006	100,379,685	30.2	8.8	\$500,000 and over.....	6	4,949,646	3.6	29.3
\$100,000 to \$500,000.....	1,651	386,075,388	24.9	33.7	<b>KANSAS</b> .....	129	15,748,535	100.0	100.0
\$500,000 to \$1,000,000.....	377	257,190,333	5.7	22.4	Less than \$5,000.....	5	15,036	3.9	0.1
\$1,000,000 to \$5,000,000.....	156	289,392,334	2.4	25.3	\$5,000 to \$20,000.....	49	649,726	38.0	3.5
\$5,000,000 and over.....	10	92,608,301	0.2	8.1	\$20,000 to \$100,000.....	36	1,691,449	27.9	10.7
<b>PENNSYLVANIA</b> .....	1,938	362,973,952	100.0	100.0	\$100,000 to \$500,000.....	34	7,326,918	26.4	46.5
Less than \$5,000.....	290	983,845	15.0	0.3	\$500,000 and over.....	5	6,164,406	3.9	89.1
\$5,000 to \$20,000.....	508	5,562,313	26.2	1.5	<b>OKLAHOMA</b> .....	94	14,477,317	100.0	100.0
\$20,000 to \$100,000.....	598	29,120,676	30.9	8.0	Less than \$5,000.....	6	19,429	6.4	0.1
\$100,000 to \$500,000.....	285	67,810,917	19.9	24.1	\$5,000 to \$20,000.....	10	107,432	10.6	0.7
\$500,000 to \$1,000,000.....	104	71,709,120	5.4	19.8	\$20,000 to \$100,000.....	33	2,155,983	40.4	14.9
\$1,000,000 to \$5,000,000.....	45	91,793,645	2.3	25.3	\$100,000 to \$500,000.....	24	7,977,676	36.2	58.1
\$5,000,000 and over.....	8	76,623,436	0.4	21.1	\$500,000 to \$1,000,000.....	6	4,216,897	6.4	29.1
<b>WEST VIRGINIA</b> .....	626	193,108,343	100.0	100.0	<b>TENNESSEE</b> .....	107	14,024,432	100.0	100.0
Less than \$5,000.....	49	153,724	5.3	0.1	Less than \$5,000.....	3	9,678	2.8	0.1
\$5,000 to \$20,000.....	139	1,614,473	15.0	0.8	\$5,000 to \$20,000.....	29	319,849	27.1	2.3
\$20,000 to \$100,000.....	321	17,215,144	34.7	8.9	\$20,000 to \$100,000.....	41	2,060,754	38.3	14.7
\$100,000 to \$500,000.....	217	74,396,658	34.2	38.5	\$100,000 to \$500,000.....	26	6,425,274	24.3	45.8
\$500,000 to \$1,000,000.....	75	50,120,169	8.1	26.0	\$500,000 to \$1,000,000.....	8	5,208,877	7.5	37.1
\$1,000,000 and over.....	25	49,608,176	2.7	25.7	<b>UTAH</b> .....	27	12,632,035	100.0	100.0
<b>ILLINOIS</b> .....	447	138,767,835	100.0	100.0	Less than \$5,000.....	3	5,330	11.1	0.1
Less than \$5,000.....	39	140,655	8.7	0.1	\$5,000 to \$20,000.....	8	79,031	29.6	0.6
\$5,000 to \$20,000.....	78	830,444	17.4	0.6	\$20,000 to \$100,000.....	3	134,620	11.1	1.1
\$20,000 to \$100,000.....	96	4,609,292	21.5	3.3	\$100,000 to \$500,000.....	7	2,182,211	25.9	17.8
\$100,000 to \$500,000.....	142	26,984,233	31.8	26.6	\$500,000 and over.....	6	10,297,843	22.2	81.0
\$500,000 to \$1,000,000.....	66	45,418,571	14.8	32.7	<b>MISSOURI</b> .....	179	12,077,845	100.0	100.0
\$1,000,000 and over.....	26	50,834,590	5.8	36.6	Less than \$5,000.....	17	62,010	9.5	0.5
<b>OHIO</b> .....	788	77,968,602	100.0	100.0	\$5,000 to \$20,000.....	65	719,305	38.0	6.0
Less than \$5,000.....	145	490,912	18.4	0.6	\$20,000 to \$100,000.....	59	2,740,394	33.0	22.8
\$5,000 to \$20,000.....	249	2,708,069	31.6	3.5	\$100,000 and over.....	35	8,547,136	19.6	70.8
\$20,000 to \$100,000.....	217	10,456,980	27.5	13.4	<b>WASHINGTON</b> .....	35	10,737,656	100.0	100.0
\$100,000 to \$500,000.....	155	36,828,984	19.7	47.2	\$5,000 to \$20,000.....	5	78,881	14.3	0.7
\$500,000 to \$1,000,000.....	13	8,834,585	1.6	11.3	\$20,000 to \$100,000.....	12	702,859	34.3	6.5
\$1,000,000 to \$5,000,000.....	9	18,667,122	1.1	23.9	\$100,000 to \$500,000.....	13	3,734,090	37.1	34.8
<b>KENTUCKY</b> .....	635	72,432,840	100.0	100.0	\$500,000 and over.....	5	6,220,086	14.3	57.9
Less than \$5,000.....	105	315,311	15.5	0.4	<b>NEW MEXICO</b> .....	21	9,905,541	100.0	100.0
\$5,000 to \$20,000.....	151	1,708,812	23.8	2.4	Less than \$5,000.....	3	7,633	14.3	0.1
\$20,000 to \$100,000.....	214	10,575,195	33.7	14.6	\$5,000 to \$20,000.....	3	35,186	14.3	0.4
\$100,000 to \$500,000.....	142	32,212,748	22.4	44.5	\$20,000 to \$100,000.....	6	192,774	28.6	1.9
\$500,000 to \$1,000,000.....	15	10,746,001	2.4	14.8	\$100,000 to \$500,000.....	4	644,549	19.0	6.5
\$1,000,000 to \$5,000,000.....	8	16,879,773	1.3	23.3	\$500,000 and over.....	5	9,026,399	23.8	91.1
<b>INDIANA</b> .....	295	45,492,726	100.0	100.0	<b>MONTANA</b> .....	67	8,591,211	100.0	100.0
Less than \$5,000.....	33	112,907	11.2	0.2	Less than \$5,000.....	17	51,507	25.4	0.6
\$5,000 to \$20,000.....	65	640,042	22.0	1.4	\$5,000 to \$20,000.....	20	190,629	29.9	2.2
\$20,000 to \$100,000.....	70	3,338,009	23.7	7.3	\$20,000 to \$100,000.....	16	648,582	23.9	7.5
\$100,000 to \$500,000.....	110	25,354,580	37.3	55.7	\$100,000 to \$500,000.....	8	1,872,972	11.9	21.8
\$500,000 to \$1,000,000.....	11	7,029,541	3.7	15.5	\$500,000 and over.....	6	4,827,571	9.0	67.8
\$1,000,000 to \$5,000,000.....	6	9,016,967	2.0	19.8	<b>MARYLAND</b> .....	58	8,195,667	100.0	100.0
<b>ALABAMA</b> .....	188	45,389,441	100.0	100.0	Less than \$5,000.....	3	8,159	5.2	0.1
Less than \$5,000.....	9	29,274	4.8	0.1	\$5,000 to \$20,000.....	15	177,125	26.9	2.2
\$5,000 to \$20,000.....	29	330,464	15.4	0.7	\$20,000 to \$100,000.....	23	1,873,272	39.7	16.8
\$20,000 to \$100,000.....	63	3,389,020	33.5	7.5	\$100,000 and over.....	17	6,637,111	29.3	81.0
\$100,000 to \$500,000.....	60	13,677,544	31.9	30.2	<b>ARKANSAS</b> .....	85	5,292,274	100.0	100.0
\$500,000 to \$1,000,000.....	18	12,772,097	9.6	28.2	Less than \$5,000.....	10	29,964	11.8	0.6
\$1,000,000 to \$5,000,000.....	9	15,161,042	4.8	33.4	\$5,000 to \$20,000.....	24	253,712	28.2	4.8
<b>COLORADO</b> .....	161	28,342,195	100.0	100.0	\$20,000 to \$100,000.....	39	1,963,940	45.9	37.1
Less than \$5,000.....	12	42,183	7.5	0.1	\$100,000 and over.....	12	3,044,658	14.1	57.8
\$5,000 to \$20,000.....	33	351,942	20.5	1.2	<b>TEXAS</b> .....	33	4,322,100	100.0	100.0
\$20,000 to \$100,000.....	44	2,750,530	27.3	9.7	Less than \$5,000.....	3	6,866	9.1	0.2
\$100,000 to \$500,000.....	55	13,506,468	34.2	47.7	\$5,000 to \$20,000.....	4	31,966	12.1	0.7
\$500,000 and over.....	17	11,692,072	10.6	41.3	\$20,000 to \$100,000.....	18	944,949	64.5	21.9
					\$100,000 and over.....	8	3,338,319	24.2	77.8

1 Less than one-tenth of 1 per cent.  
 2 Includes the group "\$5,000,000 and over."  
 3 Includes the group "\$1,000,000 to \$5,000,000."

4 Includes the groups "\$500,000 to \$1,000,000" and "\$1,000,000 to \$5,000,000."  
 5 Includes the group "\$500,000 to \$1,000,000."

In Table 18 statistics similar to those in Table 17 are presented, for the United States as a whole, for bituminous coal-mining enterprises classified according to mining method. The table shows that among enterprises using mining machines less than two-fifths were small and had products valued at less than \$100,000 each, whereas among the enterprises where mining machines were not used more than four-fifths of the enterprises were small. Mining enterprises using mining machines embraced approximately three-fourths of all the bituminous coal-mining enterprises which reported products valued at more than \$100,000 each.

TABLE 18.—SIZE, BY VALUE OF PRODUCTS, OF BITUMINOUS COAL PRODUCING ENTERPRISES CLASSIFIED ACCORDING TO MINING METHOD: 1919.

VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES WITHOUT MINING MACHINES.		ENTERPRISES USING MINING MACHINES.	
	Num-ber.	Value of products.	Num-ber.	Value of products.
United States.....	4,018	\$247,069,572	2,618	\$898,907,906
Less than \$5,000.....	779	2,580,740	89	130,283
\$5,000 to \$20,000.....	1,397	14,971,149	231	2,648,342
\$20,000 to \$100,000.....	1,243	57,670,619	763	42,709,016
\$100,000 to \$500,000.....	521	111,581,138	1,130	274,494,260
\$500,000 to \$1,000,000.....	68	43,829,798	309	218,666,547
\$1,000,000 to \$5,000,000.....	10	16,736,140	146	272,656,244
\$5,000,000 and over.....			10	92,608,301

In Table 19 producing bituminous-coal enterprises in the United States as a whole are divided into two groups—those enterprises which operate coke plants at the mines and enterprises without coke plants. The table shows that although enterprises operating coke

plants at the mines were relatively very few in number, they were chiefly large enterprises and included 7 per cent of all bituminous coal enterprises having products valued at more than \$100,000 each, and nearly 20 per cent of those having products valued at more than \$1,000,000.

TABLE 19.—SIZE, BY VALUE OF PRODUCTS, OF BITUMINOUS COAL PRODUCING ENTERPRISES WITH AND WITHOUT COKE PLANTS: 1919.

VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES OPERATING COKE PLANTS AT THE MINES.		ENTERPRISES WITHOUT COKE PLANTS.	
	Num-ber.	Value of products.	Num-ber.	Value of products.
United States.....	184	\$157,865,973	6,452	\$688,111,522
Less than \$5,000.....			818	2,711,023
\$5,000 to \$20,000.....	3	37,642	1,615	17,576,849
\$20,000 to \$100,000.....	29	1,768,745	1,977	98,615,822
\$100,000 to \$500,000.....	78	21,205,379	1,573	364,870,019
\$500,000 to \$1,000,000.....	45	28,990,788	534	228,205,575
\$1,000,000 to \$5,000,000.....	27	58,806,007	129	280,536,877
\$5,000,000 and over.....	4	47,062,444	6	45,545,887

Size of enterprises according to quantity of products.—Table 20 presents, for anthracite enterprises classified according to the character of operation and according to the quantity of output per enterprise, the average number of wage earners and the quantity and value of products. The table shows that the 16 largest enterprises produced approximately two-thirds of the total output, that only among the collieries operating breakers, was an individual output of more than 500,000 tons reported, and that the output of culm washeries and dredges was relatively small.

TABLE 20.—SIZE, BY QUANTITY OF PRODUCT, OF ANTHRACITE PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO CHARACTER OF OPERATION: 1919.

QUANTITY OF PRODUCT PER ENTERPRISE (TONS, 2,240 POUNDS).	Number of enterprises.	Number of—		Wage earners (average number).	Coal produced (tons, 2,240 pounds).	Value of all products.
		Mines, washeries, or dredges.	Breakers.			
Anthracite (Pennsylvania)—All enterprises.....	264			147,372	78,723,668	\$364,064,142
Less than 25,000.....	114			1,006	883,014	2,476,040
25,000 to 50,000.....	17			1,025	591,368	2,138,001
50,000 to 100,000.....	26			3,823	1,891,627	8,161,184
100,000 to 200,000.....	28			8,784	4,401,213	21,014,209
200,000 to 500,000.....	42			28,606	12,921,426	57,047,884
500,000 to 1,000,000.....	11			12,915	7,100,179	34,028,125
1,000,000 and over.....	16			96,124	80,934,841	289,218,749
Enterprises operating mines only.....	16	Mines.		2,783	1,709,181	7,456,219
Less than 50,000.....	7	7		207	81,943	332,412
50,000 to 100,000.....	5	5		566	306,045	1,345,646
100,000 to 500,000.....	4	4		2,010	1,318,193	5,780,161
Enterprises operating breakers, mines, and washeries.....	140	358	245	143,799	75,709,068	368,549,591
Less than 25,000.....	22	21	22	559	230,346	1,108,253
25,000 to 50,000.....	9	9	9	3,745	323,645	1,435,851
50,000 to 100,000.....	17	17	17	3,099	1,274,785	5,931,467
100,000 to 200,000.....	26	28	27	8,480	4,075,749	19,798,347
200,000 to 500,000.....	39	56	41	21,877	11,779,543	51,978,810
500,000 to 1,000,000.....	11	29	16	12,915	7,100,179	34,028,125
1,000,000 and over.....	16	198	113	96,124	80,934,841	289,218,749
Enterprises operating only culm washeries.....	19	Washeries.		434	684,034	2,174,200
Less than 50,000.....	14	14		254	237,053	835,394
50,000 to 200,000.....	5	5		180	456,981	1,340,806
Enterprises operating only dredges.....	79	Dredges.		256	621,365	904,132
Less than 25,000.....	73	75		257	442,376	643,986
25,000 to 50,000.....	6	6		99	178,989	260,146

<sup>1</sup> Includes, in addition to the 358 mines and 245 breakers shown by the table, data for 60 washeries.

Except for the class of enterprises reporting more than 1,000,000 tons, the grouping by enterprises in Table 20 is essentially a grouping by plants or unit operations, as most of the enterprises represent only 1 mine, breaker, washery, or dredge. The class of enterprises producing more than 1,000,000 tons each and having 113 breakers and 198 mines all told, reported from 3 to 25 breakers and from 3 to 28 mines per enterprise. They averaged less than 500,000 tons per breaker but according to analysis made by the United States Geological Survey of returns for individual breakers, 25 of these having an aggregate output of 17,500,000 tons produced more than 500,000 tons each and 4 of these produced between 1,000,000 and 1,250,000 tons each. The data for enterprises operating mines only and culm washeries only are of little significance because most of the mines and culm washeries are covered in reports of enterprises reporting breakers. The data for dredges show that all such operations were small and averaged little more than 7,500 tons for each dredge.

Table 21 shows for the United States as a whole and

by selected states, for bituminous coal-mining enterprises classified according to the quantity of output per enterprise, the number of mines, the average number of wage earners, and the total quantity and value of products for each group. In Table 21 the indicated average output per mine in each class of enterprises is within the specified range for only the groups of enterprises producing less than 100,000 tons. This is because the smaller enterprises as a rule operated but one mine each, whereas many of the larger enterprises operated two or more mines. In the four groups of enterprises producing more than 100,000 tons the average per mine is less than the specified range of output for the enterprises because the enterprises in these groups averaged more than one mine per enterprise. It is noteworthy, however, that the table indicates progressive increase, from group to group, of output per mine and per wage earner from approximately 7,800 tons per mine and 620 tons per wage earner in the group of smallest enterprises to more than 200,000 tons per mine and 1,000 tons per wage earner in the group of largest enterprises.<sup>1</sup>

TABLE 21.—SIZE OF BITUMINOUS COAL ENTERPRISES, BY QUANTITY OF PRODUCT, FOR SELECTED STATES: 1919.

STATE AND QUANTITY PER ENTERPRISE (TONS, 2,000 POUNDS).	Number of enterprises.	Number of mines.	Wage earners (average number).	Value of products.	Coal produced (tons, 2,000 pounds).	STATE AND QUANTITY PER ENTERPRISE (TONS, 2,000 POUNDS).	Number of enterprises.	Number of mines.	Wage earners (average number).	Value of products.	Coal produced (ton, 2,000 pounds).
<b>UNITED STATES.....</b>	<b>6,636</b>	<b>8,282</b>	<b>545,798</b>	<b>\$1,145,977,565</b>	<b>400,426,836</b>	<b>INDIANA.....</b>	<b>295</b>	<b>317</b>	<b>24,479</b>	<b>45,492,736</b>	<b>20,504,791</b>
Less than 25,000.....	3,972	4,141	51,774	86,197,351	32,174,984	Less than 25,000.....	142	142	1,405	2,195,823	375,173
25,000 to 50,000.....	779	873	41,642	78,079,200	28,023,083	25,000 to 50,000.....	24	26	1,878	2,847,371	1,262,339
50,000 to 100,000.....	741	928	70,081	188,497,001	53,178,638	50,000 to 100,000.....	49	52	4,861	7,631,144	3,461,061
100,000 to 200,000.....	610	873	105,669	219,734,148	85,905,338	100,000 to 200,000.....	48	52	7,896	14,884,933	6,668,887
200,000 to 500,000.....	415	754	136,109	302,772,145	122,171,828	200,000 to 500,000.....	19	23	5,991	12,441,785	5,593,619
500,000 to 1,000,000.....	78	302	54,081	127,158,011	51,832,485	500,000 and over <sup>1</sup> .....	3	12	2,751	5,801,601	2,612,213
1,000,000 and over.....	43	412	85,462	198,539,706	87,136,450	<b>IOWA.....</b>	<b>167</b>	<b>195</b>	<b>10,584</b>	<b>16,908,255</b>	<b>5,474,249</b>
<b>ALABAMA.....</b>	<b>188</b>	<b>260</b>	<b>24,645</b>	<b>45,359,441</b>	<b>15,411,496</b>	Less than 25,000.....	114	115	1,540	2,333,460	659,317
Less than 25,000.....	85	90	1,652	2,478,255	838,634	25,000 to 50,000.....	20	23	1,890	2,377,846	750,927
25,000 to 50,000.....	39	45	2,559	4,514,768	1,432,293	50,000 to 100,000.....	19	28	2,794	4,215,624	1,351,574
50,000 to 100,000.....	21	27	2,494	4,346,788	1,411,263	100,000 to 200,000.....	9	16	2,192	3,606,794	1,189,184
100,000 to 200,000.....	24	38	5,634	10,961,705	3,361,891	200,000 to 500,000.....	5	13	2,459	4,369,634	1,542,947
200,000 to 500,000.....	14	28	6,737	13,151,395	4,479,205	<b>KANSAS.....</b>	<b>129</b>	<b>166</b>	<b>8,064</b>	<b>15,748,535</b>	<b>5,204,288</b>
500,000 and over <sup>1</sup> .....	5	32	5,572	9,906,535	3,888,160	Less than 25,000.....	79	81	968	1,888,823	451,317
<b>ARKANSAS.....</b>	<b>85</b>	<b>91</b>	<b>2,787</b>	<b>5,292,274</b>	<b>1,440,468</b>	25,000 to 50,000.....	21	23	1,084	2,164,744	733,761
Less than 25,000.....	68	70	1,163	1,900,960	511,569	50,000 to 100,000.....	18	23	1,916	3,886,815	1,278,081
25,000 to 50,000.....	9	9	478	832,499	274,137	100,000 to 200,000.....	7	19	1,274	2,649,047	901,924
50,000 to 100,000.....	8	8	539	1,013,521	311,789	200,000 and over <sup>1</sup> .....	4	21	2,962	5,689,107	1,539,355
100,000 to 200,000.....	3	4	607	1,466,294	342,906	<b>KENTUCKY.....</b>	<b>635</b>	<b>742</b>	<b>39,769</b>	<b>72,432,940</b>	<b>29,426,018</b>
<b>COLORADO.....</b>	<b>161</b>	<b>164</b>	<b>11,252</b>	<b>23,342,195</b>	<b>10,152,512</b>	Less than 25,000.....	411	416	5,604	7,929,537	3,101,328
Less than 25,000.....	70	70	942	1,578,117	555,755	25,000 to 50,000.....	88	91	5,149	8,027,113	3,191,138
25,000 to 50,000.....	31	31	1,455	3,126,395	1,114,301	50,000 to 100,000.....	59	67	5,009	10,231,907	4,124,325
50,000 to 100,000.....	22	22	1,564	4,227,033	1,537,738	100,000 to 200,000.....	52	77	9,154	18,053,697	7,262,461
100,000 to 200,000.....	28	28	4,520	11,648,892	4,123,707	200,000 to 500,000.....	20	60	6,896	14,869,800	6,080,131
200,000 to 500,000.....	10	13	2,771	7,762,068	2,880,931	500,000 and over <sup>1</sup> .....	5	31	7,358	13,320,396	5,656,635
<b>ILLINOIS.....</b>	<b>447</b>	<b>499</b>	<b>73,730</b>	<b>138,767,835</b>	<b>60,330,650</b>	<b>MARYLAND.....</b>	<b>58</b>	<b>92</b>	<b>4,826</b>	<b>8,195,667</b>	<b>2,997,336</b>
Less than 25,000.....	131	133	1,932	3,271,039	1,201,768	Less than 25,000.....	30	34	521	607,616	223,986
25,000 to 50,000.....	45	46	2,639	3,912,307	1,638,796	25,000 to 50,000.....	12	16	719	1,064,502	400,559
50,000 to 100,000.....	57	58	6,450	10,061,192	4,312,673	50,000 to 100,000.....	9	16	1,060	1,872,326	701,763
100,000 to 200,000.....	63	70	13,236	21,520,128	9,028,806	100,000 and over <sup>2</sup> .....	7	26	2,526	4,630,723	1,665,028
200,000 to 500,000.....	80	90	28,273	54,768,786	24,172,952	<b>MICHIGAN.....</b>	<b>11</b>	<b>14</b>	<b>1,654</b>	<b>3,861,874</b>	<b>995,999</b>
500,000 to 1,000,000.....	14	26	9,160	20,260,232	8,939,959	Less than 50,000 <sup>1</sup> .....	5	5	347	643,063	163,023
1,000,000 and over.....	7	27	12,000	24,974,161	10,940,692	50,000 and over <sup>4</sup> .....	6	9	1,307	3,218,791	842,976

See footnotes at end of table.

<sup>1</sup> It should be noted in connection with Table 21 that it is not based on the quantity of output per mine and that the quantity of output per mine is not indicated except by averages for the groups. The average per mine for the groups of enterprises presented by this table is not the average output of mines of like size, because the enterprises as defined by the Bureau of the Census may comprise the operations of several mines of very different sizes in any one state. Statistics regarding the number of tons of coal produced by groups of mines classified according to output are given in the United States Geological Survey's publication, Mineral Resources. These statistics show that in 1918, the year of maximum

production, mines producing more than 200,000 tons numbered 821, or 7.4 per cent of the total number in the United States, that they produced an average of 342,591 tons per mine, and that the average, by states, for this class of mines in only one state barely exceeded 500,000 tons and ranged down to approximately 212,000 tons. The aggregate production in mines of this class was 281,266,842 tons, or 48.5 per cent of the total output for the United States. In 1919, 550 mines, or 4.4 per cent of the total number, produced more than 200,000 tons each. The average output of these mines was 317,906 tons and their combined output was 174,848,412 tons.

TABLE 21.—SIZE OF BITUMINOUS COAL ENTERPRISES, BY QUANTITY OF PRODUCT, FOR SELECTED STATES: 1919—Continued.

STATE AND QUANTITY PER ENTERPRISE (TONS, 2,000 POUNDS).	Number of enterprises.	Number of mines.	Wage earners (average number).	Value of products.	Coal produced (tons, 2,000 pounds).	STATE AND QUANTITY PER ENTERPRISE (TONS, 2,000 POUNDS).	Number of enterprises.	Number of mines.	Wage earners (average number).	Value of products.	Coal produced (ton, 2,000 pounds).
<b>MISSOURI</b> .....	179	196	7,285	\$12,077,845	3,783,714	<b>TEXAS</b> .....	33	42	2,711	\$4,322,100	1,588,240
Less than 25,000.....	136	136	2,006	2,585,138	835,084	Less than 25,000.....	14	14	201	232,312	145,110
25,000 to 50,000.....	20	21	1,198	2,122,961	671,979	25,000 to 50,000.....	10	11	616	713,532	360,770
50,000 to 100,000.....	16	18	1,798	3,352,345	1,112,286	50,000 to 100,000.....	5	8	480	990,107	339,816
100,000 and over <sup>1</sup> .....	7	21	2,288	3,716,431	1,167,365	100,000 and over <sup>2</sup> .....	4	9	1,404	2,416,149	741,537
<b>MONTANA</b> .....	67	76	3,797	8,591,211	3,211,719	<b>UTAH</b> .....	27	24	3,647	12,632,085	4,592,847
Less than 25,000.....	51	52	373	748,401	248,287	Less than 100,000 <sup>3</sup> .....	16	16	235	483,708	204,773
25,000 to 50,000.....	4	4	233	344,953	118,340	100,000 to 200,000.....	5	5	533	1,910,484	711,767
50,000 to 100,000.....	3	4	332	686,901	232,461	200,000 tons and over <sup>4</sup> .....	6	13	2,879	10,227,843	3,676,307
100,000 to 200,000.....	5	7	933	2,038,666	762,605	<b>VIRGINIA</b> .....	108	118	11,215	23,763,440	9,334,786
200,000 and over <sup>5</sup> .....	4	9	1,926	4,774,290	1,830,056	Less than 25,000.....	59	63	787	1,080,431	403,935
<b>OHIO</b> .....	788	898	40,452	77,988,292	35,140,541	25,000 to 50,000.....	13	14	984	1,253,811	454,292
Less than 25,000.....	546	561	5,227	8,852,274	3,494,475	50,000 to 100,000.....	13	16	1,232	2,406,454	890,608
25,000 to 50,000.....	87	100	4,390	7,394,015	3,149,464	100,000 to 200,000.....	7	7	1,087	2,315,581	892,056
50,000 to 100,000.....	66	72	5,647	11,389,567	4,832,485	200,000 to 500,000.....	11	12	3,893	8,390,242	3,378,058
100,000 to 200,000.....	57	76	9,450	17,707,988	8,078,409	500,000 to 1,000,000.....	5	6	3,272	8,316,941	3,315,837
200,000 to 500,000.....	23	43	6,642	13,977,636	6,414,028	<b>WASHINGTON</b> .....	35	43	4,413	10,737,656	2,986,910
500,000 to 1,000,000.....	5	20	3,535	7,669,686	3,500,715	Less than 25,000.....	13	13	817	444,146	136,185
1,000,000 and over.....	4	26	5,861	10,997,436	5,670,965	25,000 to 50,000.....	9	9	579	1,220,590	331,166
<b>OKLAHOMA</b> .....	94	131	7,040	14,477,317	3,782,794	50,000 to 100,000.....	5	5	685	1,615,343	371,512
Less than 25,000.....	49	51	1,050	1,811,651	485,304	100,000 to 200,000.....	4	5	999	2,310,906	571,273
25,000 to 50,000.....	19	26	1,288	2,481,925	677,731	200,000 and over <sup>2</sup> .....	4	11	1,838	5,146,671	1,586,774
50,000 to 100,000.....	17	30	2,345	4,710,409	1,203,537	<b>WEST VIRGINIA</b> .....	926	1,267	87,095	193,108,343	77,617,115
100,000 and over <sup>6</sup> .....	9	24	2,407	5,473,332	1,416,222	Less than 25,000.....	396	6,131	6,131	9,505,392	3,757,643
<b>PENNSYLVANIA</b> .....	1,938	2,584	154,992	362,973,952	150,026,687	25,000 to 50,000.....	173	197	7,599	15,281,965	6,233,345
Less than 25,000.....	1,348	1,452	17,890	33,561,349	12,980,999	50,000 to 100,000.....	154	202	12,967	28,260,514	11,167,142
25,000 to 50,000.....	118	138	5,354	10,334,018	4,225,695	100,000 to 200,000.....	117	175	19,041	42,802,060	16,409,447
50,000 to 100,000.....	174	229	14,417	31,634,235	12,349,073	200,000 to 500,000.....	78	161	23,659	55,844,557	22,296,137
100,000 to 200,000.....	144	220	21,629	50,294,555	20,367,379	500,000 to 1,000,000.....	14	86	9,633	22,712,310	9,242,626
200,000 to 500,000.....	112	216	33,151	81,522,668	35,270,468	1,000,000 and over.....	4	60	8,065	18,701,555	8,510,775
500,000 to 1,000,000.....	22	74	14,770	37,653,963	15,207,023	<b>WYOMING</b> .....	46	65	7,091	18,723,451	7,212,006
1,000,000 and over.....	20	255	47,811	117,973,239	51,648,850	Less than 50,000 <sup>7</sup> .....	17	17	167	418,924	146,040
<b>TENNESSEE</b> .....	107	143	9,556	14,024,422	5,132,167	50,000 to 100,000.....	6	6	410	1,094,087	460,334
Less than 25,000.....	62	64	1,282	1,649,258	548,718	100,000 to 200,000.....	7	9	1,324	3,082,945	1,187,920
25,000 to 50,000.....	16	23	1,308	1,618,455	572,157	200,000 to 500,000.....	13	21	3,405	9,691,618	3,671,650
50,000 to 100,000.....	14	26	1,770	2,820,397	1,081,247	500,000 to 1,000,000.....	3	12	1,785	4,485,877	1,746,002
100,000 to 200,000.....	7	13	2,157	2,976,040	1,058,540						
200,000 to 500,000.....	8	19	3,080	5,060,282	1,871,507						

<sup>1</sup> Includes the group, "1,000,000 and over."  
<sup>2</sup> Includes the group, "500,000 to 1,000,000."  
<sup>3</sup> Includes the group, "Less than 25,000."

<sup>4</sup> Includes the groups, "100,000 to 200,000" and "200,000 to 500,000."  
<sup>5</sup> Includes the group, "200,000 to 500,000."  
<sup>6</sup> Includes the groups, "Less than 25,000" and "25,000 to 50,000."

Forty-three enterprises in Alabama, Illinois, Indiana, Kentucky, New Mexico, Ohio, Pennsylvania, Utah, and West Virginia producing more than 1,000,000 tons each and, in fact, averaging more than 2,000,000 tons, accounted for 19 per cent of the total production of bituminous coal. The enterprises in the groups producing from 100,000 to 1,000,000 tons, of which there were 1,101, produced approximately 260,000,000 tons, or 56 per cent of the total output, and the 5,492 enterprises in the groups producing less than 100,000 tons, produced about 113,000,000 tons, or 25 per cent of the total output. The preponderance in numbers and the inferior productive capacity of the smaller enterprises is shown for all of the important coal-producing states.

Table 22 shows, for bituminous coal-mining enterprises operating without mining machines and for those using mining machines, the same data as in Table 21, assembled by mining regions and for the

principal states. The table shows for the United States as a whole and for the leading states and regions, that all or most of the largest enterprises were in the class using mining machines and about three-fourths of the smaller enterprises (producing less than 50,000 tons each) were in the class operating without mining machines. The table also indicates that the average output per wage earner was larger in the first class (approximately 900 tons in the United States as a whole) than in the second class (about 700 tons). The output per wage earner in enterprises using mining machines ranged from nearly 600 tons in the Western and Southern Interior Regions to about 900 tons in the Northern and Middle Appalachian Regions and 1,000 tons in the Northern Great Plains, Rocky Mountain, and Pacific Coast Regions; whereas the output per wage earner in enterprises without mining machines ranged in the specified regions from only a little over 500 to about 700 and 750 tons.

TABLE 22.—SIZE, BY QUANTITY OF PRODUCT, OF BITUMINOUS COAL ENTERPRISES CLASSIFIED ACCORDING TO MINING METHOD, BY REGIONS AND SELECTED STATES: 1919.

REGION, STATE, AND QUANTITY OF PRODUCT PER ENTERPRISE (TONS, 2,000 POUNDS).	NUMBER OF ENTERPRISES.		NUMBER OF MINES.		WAGE EARNERS (AVERAGE NUMBER).		VALUE OF PRODUCTS.		COAL PRODUCED (TONS, 2,000 POUNDS).	
	Without mining machines.	Using mining machines.	Without mining machines.	Using mining machines.	Without mining machines.	Using mining machines.	Without mining machines.	Using mining machines.	Without mining machines.	Using mining machines.
<b>UNITED STATES.....</b>	<b>4,018</b>	<b>2,618</b>	<b>4,412</b>	<b>3,870</b>	<b>133,228</b>	<b>412,870</b>	<b>\$247,069,572</b>	<b>\$998,907,993</b>	<b>92,800,744</b>	<b>367,565,082</b>
Less than 25,000.....	3,256	716	3,403	738	37,702	14,072	64,437,872	21,759,479	23,980,301	8,194,683
25,000 to 50,000.....	308	471	351	521	17,030	24,612	29,171,127	43,908,073	10,866,639	17,156,444
50,000 to 100,000.....	228	513	305	623	23,537	45,494	43,178,656	95,318,346	16,094,242	37,084,261
100,000 to 200,000.....	161	449	224	649	30,720	75,979	58,895,042	160,866,106	22,067,888	63,817,806
200,000 to 500,000.....	61	354	109	645	20,488	116,621	42,878,343	260,396,802	16,452,896	105,688,990
500,000 to 1,000,000.....	4	72	20	282	3,751	50,330	9,038,533	118,119,478	3,348,776	43,483,659
1,000,000 and over.....		43		412		89,462		198,536,709		87,139,460
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS.....</b>	<b>2,478</b>	<b>1,901</b>	<b>2,715</b>	<b>2,933</b>	<b>52,627</b>	<b>281,988</b>	<b>101,760,806</b>	<b>1,630,086,396</b>	<b>39,767,366</b>	<b>1,260,630,174</b>
Less than 25,000.....	2,184	545	2,310	565	25,784	10,414	45,343,976	15,107,006	17,388,068	6,375,245
25,000 to 50,000.....	131	358	159	401	6,099	18,232	11,391,656	32,167,014	4,528,921	13,073,807
50,000 to 100,000.....	98	369	135	462	8,286	31,294	17,376,982	67,314,243	6,861,187	28,619,789
100,000 to 200,000.....	47	324	73	452	7,081	16,197,707	113,763,622	6,476,278	45,614,131	
200,000 to 500,000.....	17	227	29	462	4,729	69,424	11,452,386	163,196,006	4,502,912	66,474,610
500,000 to 1,000,000.....	1	48	3	206	638	33,374		182,546,237		1,387,673,524
1,000,000 and over.....		30		356		66,136		154,991,968		68,899,056
<b>PENNSYLVANIA.....</b>	<b>1,283</b>	<b>655</b>	<b>1,428</b>	<b>1,156</b>	<b>27,987</b>	<b>127,005</b>	<b>57,298,806</b>	<b>1,305,675,148</b>	<b>22,750,731</b>	<b>1,127,378,956</b>
Less than 25,000.....	1,173	175	1,260	183	14,796	9,064	28,408,901	5,157,458	10,938,594	2,022,106
25,000 to 50,000.....	11	107	11	127	1,245	5,009	870,663	9,463,355	382,337	3,843,358
50,000 to 100,000.....	56	110	70	150	4,586	9,831	9,645,463	21,988,742	3,868,261	6,480,822
100,000 to 200,000.....	30	114	45	175	4,132	17,497	9,924,361	40,370,194	4,201,544	18,166,335
200,000 to 500,000.....	12	100	21	195	3,490	29,661	8,454,398	73,068,295	3,360,006	29,910,463
500,000 to 1,000,000.....	1	21	3	71	638	14,132		137,653,883		1,15,207,023
1,000,000 and over.....		20		255		47,811		117,973,239		51,648,850
<b>WEST VIRGINIA.....</b>	<b>356</b>	<b>570</b>	<b>400</b>	<b>887</b>	<b>10,412</b>	<b>76,683</b>	<b>21,453,899</b>	<b>171,654,444</b>	<b>8,258,178</b>	<b>60,358,937</b>
Less than 25,000.....	259	127	274	132	3,233	2,898	5,331,271	4,174,121	2,090,912	1,066,731
25,000 to 50,000.....	63	110	76	121	2,555	5,044	5,568,401	9,713,664	2,216,754	4,016,591
50,000 to 100,000.....	18	136	24	178	1,621	11,416	3,403,319	24,857,195	1,363,043	9,804,099
100,000 to 200,000.....	11	106	18	157	1,864	17,177	4,152,921	38,649,129	1,444,562	14,964,885
200,000 to 500,000.....	5	73	8	153	1,239	22,420	52,846,570	2,997,987	1,142,907	21,153,230
500,000 to 1,000,000.....	14			86		9,633		23,712,310		9,242,626
1,000,000 and over.....	4			60		8,095		18,701,555		8,510,775
<b>OHIO.....</b>	<b>386</b>	<b>402</b>	<b>403</b>	<b>495</b>	<b>3,429</b>	<b>37,023</b>	<b>5,497,059</b>	<b>1,72,491,543</b>	<b>2,120,651</b>	<b>1,33,019,890</b>
Less than 25,000.....	373	173	383	178	2,703	2,624	4,082,550	4,189,724	1,788,999	1,710,476
25,000 to 50,000.....	10	77	17	83	478	3,912	834,509	6,556,406	836,653	2,812,812
50,000 to 100,000.....	2	64	2	70	96	5,551		11,386,567		1,4,832,485
100,000 to 200,000.....	1	56	1	75	152	9,298		117,707,988		1,8,078,400
200,000 to 500,000.....		23		43		6,642		13,977,636		6,414,028
500,000 to 1,000,000.....	5	5	5	20		3,635		7,668,686		3,500,715
1,000,000 and over.....	4			26		5,561		10,997,436		5,670,965
<b>KENTUCKY, EASTERN.....</b>	<b>284</b>	<b>185</b>	<b>287</b>	<b>265</b>	<b>4,886</b>	<b>23,903</b>	<b>7,684,814</b>	<b>46,818,649</b>	<b>2,941,059</b>	<b>18,200,837</b>
Less than 25,000.....	253	52	256	52	3,324	1,258	4,685,398	1,811,904	1,749,875	701,817
25,000 to 50,000.....	25	48	25	51	1,245	2,972	2,091,979	4,747,445	834,632	1,821,562
50,000 to 100,000.....	6	33	6	39	317	3,248	907,437	5,936,249	356,552	2,296,200
100,000 to 200,000.....		34		56		5,588		12,354,280		4,673,379
200,000 to 500,000.....		14		44		4,780		10,984,628		4,197,952
500,000 and over.....		4		23		6,057		10,964,145		4,519,337
<b>VIRGINIA.....</b>	<b>68</b>	<b>40</b>	<b>71</b>	<b>47</b>	<b>1,708</b>	<b>9,512</b>	<b>2,460,601</b>	<b>21,302,839</b>	<b>930,721</b>	<b>1,8,404,065</b>
Less than 25,000.....	54	5	57	6	597	170	847,353	233,078	321,294	82,641
25,000 to 50,000.....	8	5	8	6	489	475	706,120	547,691	262,514	191,778
50,000 to 100,000.....	5	8	5	11	518	714	907,128	1,499,326	346,913	543,605
100,000 to 200,000.....	1	6	1	6	99	988		2,315,561		1,892,056
200,000 to 500,000.....		11		12		3,893		8,390,242		3,378,058
500,000 to 1,000,000.....		5		6		3,272		8,316,941		3,315,837
<b>TENNESSEE, NORTHEASTERN.....</b>	<b>54</b>	<b>38</b>	<b>64</b>	<b>53</b>	<b>1,870</b>	<b>5,376</b>	<b>2,107,310</b>	<b>9,206,425</b>	<b>753,036</b>	<b>1,3,374,142</b>
Less than 25,000.....	45	10	47	10	748	362	904,114	442,504	329,989	151,417
25,000 to 50,000.....	4	9	8	11	385	703	404,742	966,193	148,853	328,306
50,000 to 100,000.....	4	8	8	9	449	913	798,454	1,483,589	274,194	612,869
100,000 to 200,000.....	1	5	1	8	288	1,370		2,388,502		1,860,683
200,000 to 500,000.....		6		15		2,028		3,928,637		1,420,888
<b>MARYLAND.....</b>	<b>47</b>	<b>11</b>	<b>62</b>	<b>30</b>	<b>2,340</b>	<b>2,486</b>	<b>3,890,174</b>	<b>4,305,493</b>	<b>1,476,465</b>	<b>1,620,871</b>
Less than 25,000.....	27	3	30	4	383	138	509,399	98,217	182,425	40,661
25,000 to 50,000.....	10	2	14	2	602	117	915,242	169,280	347,189	59,379
50,000 to 100,000.....	7	2	11	5	799	261	1,396,266	476,990	531,660	170,103
100,000 and over.....	3	4	7	19	556	1,970	1,089,267	3,661,456	414,191	1,250,837
<b>SOUTHERN APPALACHIAN REGION.....</b>	<b>154</b>	<b>51</b>	<b>198</b>	<b>90</b>	<b>13,688</b>	<b>13,486</b>	<b>23,672,799</b>	<b>24,722,243</b>	<b>7,849,013</b>	<b>3,627,737</b>
Less than 25,000.....	82	11	87	11	1,435	437	2,162,965	544,771	757,340	156,588
5,000 to 50,000.....	31	11	36	12	2,068	711	3,415,999	1,346,284	1,119,979	419,312
50,000 to 100,000.....	13	11	24	13	1,788	1,284	2,777,240	2,306,936	906,919	732,905
100,000 to 200,000.....	20	5	36	5	5,167	966	9,437,424	2,114,819	2,952,000	907,168
200,000 to 500,000.....	8	8	15	17	3,232	4,516	5,503,899	8,779,141	2,116,176	2,513,649
500,000 and over.....		5		32		5,572		9,906,636		3,888,160
<b>ALABAMA.....</b>	<b>139</b>	<b>49</b>	<b>172</b>	<b>88</b>	<b>11,321</b>	<b>13,327</b>	<b>20,920,103</b>	<b>24,430,338</b>	<b>6,891,294</b>	<b>3,520,212</b>
Less than 25,000.....	75	10	80	10	1,245	407	1,956,654	518,601	691,629	146,995
25,000 to 50,000.....	28	11	33	12	1,848	711	3,168,479	1,346,284	1,021,981	419,312
50,000 to 100,000.....	11	10	15	12	1,839	1,156	2,297,588	2,049,210	757,323	653,928
100,000 to 200,000.....	19	5	33	5	4,668	966	8,846,586	2,114,819	2,784,723	607,158
200,000 to 500,000.....	6	8	11	17	2,221	4,516	5,503,899	8,779,141	1,665,556	2,813,649
500,000 and over.....		5		32		5,572		9,906,636		3,888,160

<sup>1</sup> Includes quantity and value of products for those enterprises operating without mining machines which are not shown separately in order to avoid disclosure of individual operations.

<sup>2</sup> Includes the group "1,000,000 and over."

<sup>3</sup> Includes the group "500,000 to 1,000,000."

TABLE 22.—SIZE, BY QUANTITY OF PRODUCT, OF BITUMINOUS COAL ENTERPRISES CLASSIFIED ACCORDING TO MINING METHOD, BY REGIONS AND SELECTED STATES: 1919—Continued.

REGION, STATE, AND QUANTITY OF PRODUCT PER ENTERPRISE (TONS, 2,000 POUNDS)	NUMBER OF ENTERPRISES.		NUMBER OF MINES.		WAGE EARNERS (AVERAGE NUMBER).		VALUE OF PRODUCTS.		COAL PRODUCED (TONS, 2,000 POUNDS).	
	Without mining machines.	Using mining machines.	Without mining machines.	Using mining machines.	Without mining machines.	Using mining machines.	Without mining machines.	Using mining machines.	Without mining machines.	Using mining machines.
<b>EASTERN INTERIOR REGION</b> .....	568	340	580	426	29,902	79,337	47,747,972	<sup>1</sup> 154,441,066	20,857,286	<sup>1</sup> 68,253,277
Less than 25,000.....	383	46	387	46	3,562	797	5,704,187	1,194,949	2,321,673	499,403
25,000 to 50,000.....	59	35	60	37	3,313	2,131	4,930,637	3,016,630	2,169,600	1,281,951
50,000 to 100,000.....	49	77	50	82	5,315	7,740	8,172,792	12,897,755	3,586,265	5,685,982
100,000 to 200,000.....	57	72	59	84	10,822	13,878	17,839,804	23,914,724	7,634,852	10,678,925
200,000 to 500,000.....	19	86	20	109	5,946	30,433	60,045,143	60,045,143	5,161,896	26,486,854
500,000 to 1,000,000.....	1	15	4	28	944	9,494	.....	<sup>1</sup> 23,152,004	.....	<sup>1</sup> 10,253,434
1,000,000 and over.....	.....	9	.....	40	.....	14,884	.....	30,220,761	.....	13,366,728
<b>ILLINOIS</b> .....	282	165	291	208	21,050	52,730	33,477,811	<sup>1</sup> 106,290,024	14,377,945	<sup>1</sup> 45,952,705
Less than 25,000.....	164	17	166	17	1,600	332	2,791,932	479,107	1,101,366	190,402
25,000 to 50,000.....	35	10	36	10	2,035	604	3,055,734	856,573	1,299,921	353,877
50,000 to 100,000.....	30	27	30	28	3,573	2,877	5,441,256	4,619,936	2,317,921	1,994,732
100,000 to 200,000.....	84	29	86	34	7,274	5,962	11,628,238	9,891,779	4,743,676	4,285,132
200,000 to 500,000.....	18	62	19	71	5,624	22,649	10,560,540	44,208,216	4,915,061	19,257,891
500,000 to 1,000,000.....	1	13	4	21	944	8,216	.....	<sup>1</sup> 20,260,252	.....	<sup>1</sup> 8,929,669
1,000,000 and over.....	.....	7	.....	27	.....	12,060	.....	24,974,161	.....	10,940,692
<b>INDIANA</b> .....	175	120	176	141	7,100	17,379	11,184,040	<sup>1</sup> 34,308,686	5,050,629	<sup>1</sup> 15,454,162
Less than 25,000.....	119	23	119	23	1,004	311	1,678,678	517,184	663,607	215,565
25,000 to 50,000.....	18	16	18	18	949	924	1,439,017	1,408,354	650,810	603,029
50,000 to 100,000.....	16	33	17	35	1,455	3,106	2,300,763	5,320,381	1,045,951	2,412,110
100,000 to 200,000.....	21	27	21	31	3,280	4,618	5,765,582	8,819,401	2,678,261	4,017,626
200,000 to 500,000.....	1	18	1	22	322	5,669	.....	<sup>1</sup> 12,441,765	.....	<sup>1</sup> 5,593,619
500,000 and over.....	.....	3	.....	12	.....	2,751	.....	5,801,601	.....	2,612,213
<b>KENTUCKY, WESTERN</b> .....	111	55	113	77	1,752	9,228	2,100,236	<sup>1</sup> 15,829,141	968,962	<sup>1</sup> 7,306,160
Less than 25,000.....	100	6	102	6	898	154	1,233,577	198,658	556,700	93,436
25,000 to 50,000.....	6	9	6	9	329	603	435,886	751,703	209,869	325,045
50,000 to 100,000.....	3	17	3	19	287	1,757	430,773	2,957,438	202,393	1,279,120
100,000 to 200,000.....	2	16	2	19	268	3,298	.....	<sup>1</sup> 5,699,417	.....	<sup>1</sup> 2,589,082
200,000 and over.....	.....	7	.....	24	.....	3,416	.....	6,221,925	.....	3,019,477
<b>WESTERN INTERIOR REGION</b> .....	370	105	419	138	17,641	8,312	29,425,247	15,304,491	9,613,469	4,848,833
Less than 25,000.....	274	55	276	56	8,212	1,302	4,614,429	1,993,991	1,372,183	570,535
25,000 to 50,000.....	37	24	40	26	2,648	1,178	4,078,170	2,587,351	1,320,980	835,687
50,000 to 100,000.....	38	15	49	20	4,922	1,586	7,999,935	3,454,849	2,676,360	1,056,831
100,000 to 200,000.....	14	7	26	23	2,952	1,757	5,284,624	3,056,509	1,761,991	962,321
200,000 and over.....	7	4	28	13	3,907	2,489	7,448,089	4,211,791	2,481,955	1,414,506
<b>IOWA</b> .....	144	23	160	35	6,630	3,954	10,443,388	6,454,970	3,340,940	2,133,309
Less than 25,000.....	103	11	104	11	1,168	372	1,772,867	560,593	496,101	163,126
25,000 to 50,000.....	18	2	20	3	1,381	218	2,131,588	246,258	680,431	70,446
50,000 to 100,000.....	16	3	25	3	2,315	479	3,436,682	775,942	1,113,117	236,757
100,000 and over.....	7	7	11	18	1,766	2,885	3,107,251	4,806,177	1,061,161	1,060,980
<b>KANSAS</b> .....	99	30	126	40	7,009	1,075	12,315,862	2,432,672	4,410,891	793,497
Less than 25,000.....	61	18	62	19	653	215	917,927	470,896	309,069	142,248
25,000 to 50,000.....	13	8	14	8	814	220	1,363,710	801,034	447,768	285,993
50,000 to 100,000.....	21	4	29	13	2,650	540	5,375,118	1,160,744	1,814,699	365,256
200,000 and over.....	4	.....	21	.....	2,892	.....	5,659,107	.....	1,839,355	.....
<b>MISSOURI</b> .....	127	32	133	63	4,002	3,283	5,660,997	6,416,848	1,861,638	1,922,076
Less than 25,000.....	110	26	110	26	1,391	615	1,623,635	963,503	556,923	265,151
25,000 to 50,000.....	6	14	6	15	453	740	582,872	1,640,059	192,731	479,248
50,000 to 100,000.....	7	3	7	11	1,080	768	1,852,775	1,969,570	490,262	622,024
100,000 and over.....	4	3	10	11	1,128	1,160	1,791,715	1,924,716	611,722	555,643
<b>SOUTHERN INTERIOR REGION</b> .....	169	43	204	60	8,530	4,006	15,047,942	9,043,749	4,436,648	2,374,879
Less than 25,000.....	114	17	117	18	1,974	440	3,179,142	765,781	944,840	198,143
25,000 to 50,000.....	31	7	37	9	1,926	406	3,166,804	911,152	1,047,994	284,651
50,000 to 100,000.....	16	11	31	15	1,907	1,467	3,710,632	2,973,405	1,091,339	763,803
100,000 and over.....	8	8	19	18	2,723	1,695	4,991,364	4,398,411	1,352,475	1,148,232
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS</b> .....	278	168	295	210	10,828	23,797	22,747,566	<sup>1</sup> 68,214,514	7,732,275	<sup>1</sup> 24,438,831
Less than 25,000.....	218	41	219	41	1,723	673	3,383,643	1,130,406	1,173,297	389,171
25,000 to 50,000.....	19	33	19	33	976	1,628	2,187,861	3,308,634	632,155	1,157,463
50,000 to 100,000.....	14	26	16	27	1,321	1,983	3,142,974	5,140,514	990,202	1,833,339
100,000 to 200,000.....	17	33	19	39	3,360	5,305	7,609,821	14,043,184	2,572,476	4,915,496
200,000 to 500,000.....	9	27	16	37	2,432	7,855	6,423,267	22,082,354	2,314,145	7,859,268
500,000 to 1,000,000.....	1	5	6	18	1,016	3,411	.....	<sup>1</sup> 11,729,941	.....	<sup>1</sup> 4,367,404
1,000,000 and over.....	.....	3	.....	15	.....	2,942	.....	10,829,481	.....	3,866,610
<b>COLORADO</b> .....	78	83	78	86	3,733	7,519	7,098,255	<sup>1</sup> 21,243,940	2,540,481	<sup>1</sup> 7,642,031
Less than 25,000.....	53	17	53	17	558	384	968,193	609,924	342,086	213,669
25,000 to 50,000.....	8	23	8	23	386	1,069	938,766	2,187,629	304,071	810,230
50,000 to 100,000.....	6	16	6	16	455	1,109	1,129,641	3,097,392	442,919	1,094,869
100,000 to 200,000.....	9	19	9	19	1,868	2,652	4,061,655	7,586,987	1,451,406	2,672,302
200,000 to 500,000.....	2	8	2	11	466	2,305	.....	<sup>1</sup> 7,782,058	.....	<sup>1</sup> 2,850,961

<sup>1</sup> Includes quantity and value of products for those enterprises operating without mining machines which are not shown separately in order to avoid disclosure of individual operations.

<sup>2</sup> Includes the group "1,000,000 and over."

<sup>3</sup> Includes the group "500,000 to 1,000,000."

<sup>4</sup> Includes the group "200,000 to 500,000."

<sup>5</sup> Includes the group "100,000 to 200,000."

Size of enterprises according to average number of wage earners employed.—Table 23 presents for the United States as a whole, for Pennsylvania anthracite enterprises, and for bituminous coal-mining enterprises for selected states, a classification of producing enterprises according to the average number of

wage earners per enterprise, and gives the distribution of enterprises and wage earners for each class. The table shows that a large number of small enterprises as measured by the average number of wage earners employed is characteristic of the coal-mining industry.

Fifty-three per cent of the anthracite enterprises were in the class of small enterprises employing no wage earners or having fewer than 101 each; nearly three-fourths of these small enterprises, or about 39 per cent of the total number of anthracite enterprises, were dredge or culm washery operations of which there were none in the larger classes of enterprises.

On the other hand 47 per cent of the total number of anthracite enterprises, including three-fourths of all the coal mines and collieries proper, were in classes employing more than 100 wage earners. These larger classes of enterprises employed 98.5 per cent of the total number of wage earners engaged in anthracite mining.

TABLE 23.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED STATES: 1919.

STATE.	TOTAL		ENTERPRISES EMPLOYING—															
	Number of enterprises.	Wage earners (average number.)	No wage earners.	1 to 5 wage earners.			6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
			Enterprises.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	
UNITED STATES.....	6,890	698,170	64	1,574	4,476	1,588	18,543	1,258	41,638	901	65,236	1,304	277,528	124	90,541	67	195,108	
Per cent distribution.....	100.0	100.0	0.9	22.8	6.6	23.0	2.7	13.3	6.0	13.1	9.4	18.9	40.0	1.9	13.1	1.0	28.1	
Anthracite (Pennsylvania).....	254	147,372	2	62	139	39	469	20	629	13	961	63	18,240	33	21,804	22	105,110	
Per cent distribution.....	100.0	100.0	0.8	24.4	0.1	15.4	0.3	7.9	0.4	5.1	0.7	24.8	12.4	13.0	14.8	8.7	71.3	
Bituminous coal.....	6,636	545,798	62	1,512	4,337	1,549	18,074	1,238	41,009	888	64,265	1,241	259,288	101	68,737	45	89,996	
Per cent distribution.....	100.0	100.0	0.9	22.8	0.8	23.3	3.3	18.7	7.5	13.4	11.8	18.7	47.5	1.5	12.6	0.7	16.5	
Pennsylvania.....	1,938	154,992	11	564	1,557	486	5,702	363	11,784	216	15,792	263	55,281	26	17,742	19	47,184	
Per cent distribution.....	100.0	100.0	0.6	28.6	1.0	25.1	3.7	18.7	7.6	11.1	10.2	13.6	35.7	1.3	11.4	1.0	30.4	
West Virginia.....	926	87,095	85	263	192	2,373	231	7,601	170	11,770	230	46,884	13	8,915	8	9,289		
Per cent distribution.....	100.0	100.0	9.2	0.3	20.7	2.7	24.9	8.7	18.4	13.5	24.8	53.8	1.4	10.2	0.5	10.7		
Illinois.....	447	73,780	3	77	229	73	539	46	1,570	46	3,402	178	44,018	18	11,867	6	11,855	
Per cent distribution.....	100.0	100.0	0.7	17.2	0.3	16.3	1.1	10.3	2.1	10.3	4.6	30.8	59.7	4.0	16.1	1.3	16.1	
Ohio.....	788	40,452	27	263	725	198	2,258	129	4,390	76	5,755	95	17,690	7	4,966	3	4,678	
Per cent distribution.....	100.0	100.0	3.4	32.1	1.8	25.1	5.6	16.4	10.9	9.6	14.2	12.1	43.7	0.9	12.3	0.4	11.6	
Kentucky.....	635	39,769	1	138	390	190	3,074	122	4,024	97	6,969	89	16,976	5	3,368	3	5,968	
Per cent distribution.....	100.0	100.0	0.2	21.7	1.0	28.3	5.2	19.2	10.1	15.3	17.5	14.0	42.7	0.8	8.5	0.5	15.0	
Alabama.....	188	24,648	18	63	36	473	42	1,407	33	2,388	50	11,978	5	3,516	4	4,328		
Per cent distribution.....	100.0	100.0	9.6	0.3	19.1	1.9	22.3	5.7	17.6	9.7	26.6	4.8	2.7	1.4	14.2	2.1	19.6	
Indiana.....	295	24,479	7	66	212	49	576	42	1,459	47	3,576	80	15,367	3	1,816	1	1,473	
Per cent distribution.....	100.0	100.0	2.4	22.4	0.9	16.6	2.4	14.2	6.0	15.9	14.6	27.1	62.8	1.0	7.4	0.3	6.0	
Colorado.....	161	11,252	1	33	96	17	200	42	1,530	35	2,500	33	6,926	7	1,496	.....	.....	
Per cent distribution.....	100.0	100.0	0.6	20.5	0.9	10.6	1.3	26.1	13.6	21.7	22.2	20.5	61.6	.....	.....	.....	.....	
Virginia.....	108	11,315	.....	19	64	28	318	14	450	19	1,410	22	5,182	6	3,941	.....	.....	
Per cent distribution.....	100.0	100.0	.....	17.6	0.6	25.9	5.2	13.0	4.0	17.6	12.6	20.4	45.8	5.6	34.2	.....	.....	
Iowa.....	167	10,594	2	52	157	36	490	18	539	23	1,658	34	6,302	2	1,496	.....	.....	
Per cent distribution.....	100.0	100.0	1.2	31.1	1.5	21.6	4.1	10.8	5.1	13.8	15.7	20.4	59.5	1.2	14.2	.....	.....	
Tennessee.....	107	9,558	.....	12	33	28	350	22	778	14	998	29	6,165	2	1,337	.....	.....	
Per cent distribution.....	100.0	100.0	.....	11.2	0.3	26.2	3.7	20.6	8.1	13.1	10.4	27.1	64.5	1.9	12.9	.....	.....	
Kansas.....	129	8,084	1	19	68	46	479	28	938	14	1,089	18	3,039	2	1,317	1	1,184	
Per cent distribution.....	100.0	100.0	0.8	14.7	0.8	35.7	5.9	21.7	11.6	10.9	13.5	14.0	37.6	1.5	16.3	0.8	14.3	
Missouri.....	179	7,285	1	44	145	56	634	40	1,259	21	1,447	16	3,135	1	676	.....	.....	
Per cent distribution.....	100.0	100.0	0.6	24.6	2.0	31.3	8.6	22.3	17.3	11.7	19.9	8.9	43.0	0.6	9.3	.....	.....	
Wyoming.....	46	7,091	.....	9	22	6	72	3	111	5	372	21	5,237	2	1,357	.....	.....	
Per cent distribution.....	100.0	100.0	.....	19.6	0.3	13.0	1.0	6.5	1.6	10.9	5.2	45.7	73.7	4.3	18.1	.....	.....	
Oklahoma.....	94	7,040	.....	1	10	24	14	153	27	916	17	1,222	24	4,175	1	551	.....	
Per cent distribution.....	100.0	100.0	1.1	10.6	0.3	14.9	2.2	28.7	13.0	18.1	17.4	25.5	59.3	1.1	7.8	.....	.....	
Maryland.....	58	4,828	.....	8	12	16	198	12	418	12	570	12	1,915	.....	1	1,413	.....	
Per cent distribution.....	100.0	100.0	.....	8.6	0.2	27.6	4.1	20.7	8.7	20.7	18.0	20.7	39.7	.....	1.7	23.3	.....	
Washington.....	35	4,413	.....	2	7	3	38	10	301	8	638	11	3,413	.....	1	1,016	.....	
Per cent distribution.....	100.0	100.0	.....	5.7	0.2	8.6	0.9	28.6	6.8	22.9	14.5	31.4	54.7	.....	2.9	23.0	.....	
Montana.....	67	3,797	1	27	54	18	173	6	190	5	348	8	1,715	2	1,317	.....	.....	
Per cent distribution.....	100.0	100.0	1.5	40.3	1.4	28.9	4.6	9.0	5.0	7.5	9.2	11.9	45.2	3.0	34.7	.....	.....	
Utah.....	27	3,647	.....	9	19	3	13	3	91	3	192	8	1,380	1	832	1	1,170	
Per cent distribution.....	100.0	100.0	.....	33.3	0.5	7.4	0.4	11.1	2.5	11.1	5.3	29.6	36.5	3.7	22.8	3.7	32.1	
New Mexico.....	21	3,564	1	4	6	5	66	2	48	4	302	2	656	3	2,486	.....	.....	
Per cent distribution.....	100.0	100.0	4.8	19.0	0.2	28.8	1.9	9.5	1.3	19.0	8.5	9.5	18.4	14.3	69.8	.....	.....	
Arkansas.....	85	2,787	.....	18	42	28	311	22	758	13	397	4	779	.....	.....	.....	.....	
Per cent distribution.....	100.0	100.0	.....	21.2	1.5	32.9	11.2	25.9	27.2	15.3	32.2	4.7	28.0	.....	.....	.....	.....	
Texas.....	33	2,711	.....	2	10	9	114	8	274	7	497	6	972	1	844	.....	.....	
Per cent distribution.....	100.0	100.0	.....	6.1	0.4	27.3	4.2	24.2	10.1	21.3	12.3	18.2	35.9	3.0	31.1	.....	.....	
Michigan.....	11	1,664	.....	.....	.....	2	21	.....	.....	2	138	6	784	1	661	.....	.....	
Per cent distribution.....	100.0	100.0	.....	.....	.....	18.2	1.3	.....	.....	18.2	11.4	54.5	47.4	9.1	40.0	.....	.....	

In bituminous-coal mining for the United States as a whole nearly two-thirds of all enterprises employing wage earners had fewer than 51, and nearly four-fifths had fewer than 101. In each of the states shown, except Michigan and Wyoming, the small enterprises, that is, all those employing no wage earners or employing fewer than 101, were more than half the total number of enterprises. For the United States as a

whole the smaller bituminous coal-mining enterprises employing fewer than 101 wage earners, reported only 23.4 per cent of the total average number. In contrast to this a relatively small number of large enterprises (21 per cent) employed 76.6 per cent of the total average number of wage earners. Most of the very large enterprises were in Pennsylvania, West Virginia, and Illinois.



Size of enterprises according to acreage of coal land operated.—Table 24 presents for producing anthracite enterprises, including only those operating mines, a classification according to the number of acres of coal land operated. The table gives the number of enterprises, mines, and acres of land operated for each class. The tendency in the anthracite field is toward large holdings. On the other hand, Table 25, which presents similar statistics for bituminous coal-mining enterprises by mining regions and states, shows that a very large proportion of enterprises operate only a small acreage of coal land. There are, however, a considerable number of enterprises in most states which reported very large holdings of coal land. In explanation of the figures in Table 25 it should be noted that most of the enterprises reported, for acreage operated, as was requested, only acreage properly pertaining to their operations during the

census year, whereas some enterprises which reported very large acreage have included figures for reserve acreage not properly pertaining to 1919 operations.

TABLE 24.—SIZE OF ANTHRACITE PRODUCING ENTERPRISES BY NUMBER OF ACRES OF COAL LAND OPERATED: 1919.

ACRES PER ENTERPRISE	ENTERPRISES.		MINES.	COAL LAND OPERATED.	
	Number.	Per cent distribution.	Number.	Acres.	Per cent distribution.
All classes.....	1 155	100. 0	374	261, 355	100. 0
1 to 50.....	19	12. 2	19	417	0. 2
50 to 100.....	10	6. 5	10	738	0. 3
100 to 200.....	11	7. 1	11	1, 845	0. 7
200 to 500.....	35	22. 6	36	12, 368	4. 7
500 to 1,000.....	24	21. 9	46	23, 082	8. 8
1,000 and over.....	46	29. 7	252	222, 905	85. 3

<sup>1</sup> Exclusive of 99 enterprises operating only breakers, culm washeries, or dredges and having no coal lands.

TABLE 25.—SIZE OF BITUMINOUS COAL PRODUCING ENTERPRISES, BY NUMBER OF ACRES OF COAL LAND OPERATED: 1919.

REGION AND STATE.	TOTAL.			ENTERPRISES OPERATING—																	
	Enter-prises	Mines	Coal land operated.	1 to 50 acres.						50 to 100 acres.						100 to 200 acres.					
				Enterprises.		Mines		Coal land operated.		Enterprises.		Mines		Coal land operated.		Enterprises.		Mines		Coal land operated.	
				Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.
UNITED STATES.....	6, 636	8, 282	8, 261, 372	1, 957	29. 5	2, 042	40, 237	0. 5	715	10. 8	741	54, 882	0. 7	803	12. 1	842	122, 105	1. 5			
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS.....</b>	<b>4, 379</b>	<b>5, 648</b>	<b>4, 869, 029</b>	<b>1, 388</b>	<b>31. 7</b>	<b>1, 467</b>	<b>25, 872</b>	<b>0. 5</b>	<b>475</b>	<b>10. 8</b>	<b>497</b>	<b>35, 947</b>	<b>0. 7</b>	<b>505</b>	<b>11. 5</b>	<b>541</b>	<b>75, 962</b>	<b>1. 6</b>			
Kentucky, eastern.....	469	552	529, 814	100	21. 3	101	2, 499	0. 5	55	11. 7	55	4, 507	0. 9	56	11. 9	58	8, 588	1. 6			
Maryland.....	58	92	53, 442	12	20. 7	18	260	0. 5	4	6. 9	4	325	0. 6	4	6. 9	5	566	1. 1			
Ohio.....	788	898	442, 887	276	35. 0	278	5, 249	1. 2	104	13. 2	107	7, 227	1. 6	125	15. 9	130	18, 078	4. 1			
Pennsylvania.....	1, 938	2, 584	1, 491, 919	822	42. 4	896	14, 235	1. 0	228	11. 8	245	17, 390	1. 2	220	11. 4	239	33, 408	2. 2			
Tennessee, northeastern.....	92	117	108, 784	17	18. 5	19	462	0. 4	7	7. 6	7	596	0. 5	8	8. 7	8	1, 329	1. 2			
Virginia.....	108	118	397, 976	21	19. 4	21	444	0. 1	7	6. 5	7	619	0. 2	9	8. 3	9	1, 362	0. 3			
West Virginia.....	926	1, 287	1, 834, 207	140	15. 1	144	2, 723	0. 1	70	7. 6	72	5, 313	0. 3	88	9. 0	92	12, 661	0. 7			
<b>SOUTHERN APPALACHIAN REGION.....</b>	<b>205</b>	<b>268</b>	<b>848, 071</b>	<b>23</b>	<b>11. 2</b>	<b>26</b>	<b>662</b>	<b>0. 1</b>	<b>23</b>	<b>11. 2</b>	<b>23</b>	<b>1, 974</b>	<b>0. 2</b>	<b>27</b>	<b>13. 2</b>	<b>27</b>	<b>4, 203</b>	<b>0. 5</b>			
Alabama.....	188	260	653, 793	23	12. 2	26	662	0. 1	23	12. 2	23	1, 974	0. 3	26	13. 8	26	4, 043	0. 6			
Georgia, North Carolina, and Tennessee, southeastern.....	17	28	194, 278											1	5. 9	1	160	0. 1			
<b>MICHIGAN REGION.....</b>	<b>11</b>	<b>14</b>	<b>9, 199</b>						<b>1</b>	<b>9. 1</b>	<b>1</b>	<b>80</b>	<b>0. 9</b>								
<b>EASTERN INTERIOR REGION.....</b>	<b>908</b>	<b>1, 006</b>	<b>1, 129, 818</b>	<b>247</b>	<b>27. 2</b>	<b>248</b>	<b>5, 629</b>	<b>0. 5</b>	<b>89</b>	<b>9. 8</b>	<b>91</b>	<b>6, 803</b>	<b>0. 6</b>	<b>93</b>	<b>10. 2</b>	<b>94</b>	<b>13, 724</b>	<b>1. 2</b>			
Illinois.....	447	499	752, 316	108	24. 2	109	2, 510	0. 3	33	7. 4	33	2, 480	0. 3	32	11. 6	33	7, 617	1. 0			
Indiana.....	295	317	176, 200	77	26. 1	77	1, 779	1. 0	36	12. 2	36	2, 665	1. 5	37	9. 2	27	4, 116	2. 3			
Kentucky, western.....	166	190	201, 302	62	37. 4	62	1, 340	0. 7	29	12. 0	22	1, 658	0. 8	14	8. 4	14	1, 991	1. 0			
<b>WESTERN INTERIOR REGION.....</b>	<b>475</b>	<b>557</b>	<b>201, 225</b>	<b>153</b>	<b>32. 2</b>	<b>153</b>	<b>3, 838</b>	<b>1. 9</b>	<b>81</b>	<b>17. 1</b>	<b>82</b>	<b>6, 396</b>	<b>3. 2</b>	<b>66</b>	<b>13. 9</b>	<b>67</b>	<b>10, 288</b>	<b>5. 1</b>			
Iowa.....	167	195	66, 359	48	28. 7	48	1, 268	2. 0	26	15. 6	26	1, 928	2. 9	20	12. 0	20	3, 094	4. 7			
Kansas.....	129	166	73, 559	51	39. 5	51	1, 015	1. 4	17	13. 2	18	1, 357	1. 8	16	12. 4	16	2, 733	3. 7			
Missouri.....	179	196	61, 317	54	30. 2	54	1, 525	2. 5	38	21. 2	38	3, 081	5. 0	30	16. 8	31	4, 461	7. 3			
<b>SOUTHERN INTERIOR REGION.....</b>	<b>212</b>	<b>264</b>	<b>179, 481</b>	<b>52</b>	<b>24. 5</b>	<b>53</b>	<b>1, 220</b>	<b>0. 7</b>	<b>20</b>	<b>9. 4</b>	<b>21</b>	<b>1, 675</b>	<b>0. 9</b>	<b>26</b>	<b>13. 2</b>	<b>29</b>	<b>4, 573</b>	<b>2. 5</b>			
Arkansas.....	85	91	24, 421	36	42. 4	37	337	3. 4	12	14. 1	12	928	3. 8	11	12. 9	11	1, 756	7. 2			
Oklahoma.....	94	131	104, 936	15	16. 0	15	353	0. 3	2	2. 1	3	200	0. 2	13	13. 8	14	2, 085	2. 0			
Texas.....	33	42	50, 124	1	3. 0	1	30	0. 1	6	18. 2	6	549	1. 1	4	12. 1	4	732	1. 5			
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS.....</b>	<b>446</b>	<b>505</b>	<b>1, 034, 569</b>	<b>94</b>	<b>21. 1</b>	<b>95</b>	<b>3, 016</b>	<b>0. 3</b>	<b>26</b>	<b>5. 8</b>	<b>26</b>	<b>2, 037</b>	<b>0. 2</b>	<b>84</b>	<b>18. 8</b>	<b>84</b>	<b>13, 335</b>	<b>1. 3</b>			
Colorado.....	161	164	127, 881	26	16. 1	26	780	0. 6	6	3. 7	6	475	0. 4	27	16. 8	27	4, 331	3. 4			
Montana.....	67	76	73, 967	27	40. 3	28	992	1. 3	3	4. 5	3	255	0. 3	9	13. 4	9	1, 452	2. 0			
New Mexico.....	21	34	641, 125	3	14. 3	3	120	( <sup>1</sup> )	3	14. 3	3	220	( <sup>1</sup> )	6	28. 6	6	1, 003	0. 2			
North Dakota.....	79	79	17, 734	25	31. 6	25	802	4. 5	9	11. 4	9	687	3. 9	23	29. 1	23	3, 546	20. 0			
South Dakota.....	5	5	880	3	60. 0	3	120	13. 6						1	20. 0	1	160	13. 2			
Utah.....	27	34	46, 891	5	18. 5	5	143	0. 3						4	14. 8	4	697	1. 5			
Washington.....	35	43	65, 940											6	17. 1	6	866	1. 3			
Wyoming.....	46	65	57, 562	4	8. 7	4	54	0. 1	5	10. 9	5	400	0. 7	8	17. 4	8	1, 280	2. 2			
California, Idaho, and Oregon.....	5	5	2, 589	1	20. 0	1	5	0. 2													

<sup>1</sup> Less than one-tenth of 1 per cent.

TABLE 25.—SIZE OF BITUMINOUS COAL PRODUCING ENTERPRISES, BY NUMBER OF ACRES OF COAL LAND OPERATED: 1919—Continued.

REGION AND STATE.	ENTERPRISES OPERATING—continued.														
	200 to 500 acres.					500 to 1,000 acres.					1,000 acres and over.				
	Enterprises.		Mines.	Coal land operated.		Enterprises.		Mines.	Coal land operated.		Enterprises.		Mines.	Coal land operated.	
	Num-ber.	Per cent of total.	Num-ber.	Acres.	Per cent of total.	Num-ber.	Per cent of total.	Num-ber.	Acres.	Per cent of total.	Num-ber.	Per cent of total.	Num-ber.	Acres.	Per cent of total.
UNITED STATES.....	1,013	15.3	1,124	343,455	4.2	848	12.8	1,022	616,013	7.4	1,300	19.6	2,511	7,064,690	85.3
NORTHERN AND MIDDLE APPALACHIAN REGIONS.....	649	14.8	737	219,262	4.5	523	12.1	645	395,500	8.0	834	19.0	1,700	4,115,498	84.7
Kentucky, eastern.....	91	19.4	92	20,382	5.7	65	13.9	66	45,090	9.1	102	21.7	130	435,745	82.2
Maryland.....	10	17.2	11	3,050	5.7	10	17.2	14	7,385	13.3	13	31.0	40	41,856	78.2
Ohio.....	100	12.7	105	23,616	7.6	93	11.8	113	55,794	13.3	90	11.4	154	319,323	72.2
Pennsylvania.....	274	14.1	324	92,137	6.2	190	8.3	215	120,324	8.1	234	12.1	665	1,214,635	81.3
Tennessee, northeastern.....	16	17.4	16	6,055	5.6	12	13.0	13	10,176	9.4	32	34.8	49	90,185	82.9
Virginia.....	18	16.7	19	5,705	1.4	11	10.2	11	7,904	2.0	42	38.9	51	281,942	95.9
West Virginia.....	140	15.1	159	45,296	2.6	177	19.1	200	133,327	7.3	316	34.1	611	1,681,597	83.9
SOUTHERN APPALACHIAN REGION.....	24	11.7	30	8,454	1.0	28	13.7	43	19,770	2.3	80	39.0	129	813,008	95.9
Alabama.....	24	12.8	30	8,454	1.3	28	12.2	31	16,006	2.4	69	36.7	124	622,654	95.2
Georgia, North Carolina, and Tennessee, southeastern.....						5	20.4	12	3,764	1.9	11	64.7	15	190,354	98.0
MICHIGAN REGION.....	3	27.3	3	1,140	12.4	6	54.5	9	2,278	24.3	1	9.1	1	5,671	61.9
EASTERN INTERIOR REGION.....	128	14.1	131	44,425	3.9	126	15.0	151	97,386	8.6	215	23.7	291	961,850	85.1
Illinois.....	57	12.8	58	19,722	2.6	66	14.8	77	45,344	6.4	131	20.3	169	671,683	89.2
Indiana.....	56	19.0	58	19,380	11.0	53	18.0	56	37,476	21.3	46	15.6	63	110,784	82.9
Kentucky, western.....	15	9.0	15	5,314	2.6	17	10.2	18	11,566	5.7	38	22.9	59	179,433	89.1
WESTERN INTERIOR REGION.....	98	20.6	111	32,805	16.3	43	9.1	51	30,279	15.0	24	7.2	93	117,659	58.5
Iowa.....	45	29.9	54	14,739	22.2	14	8.4	15	10,016	15.1	14	8.4	32	35,284	53.2
Kansas.....	24	18.6	28	8,259	11.2	12	9.3	16	7,546	10.3	9	7.0	37	62,649	71.5
Missouri.....	29	16.2	29	9,807	16.0	17	9.5	20	12,717	20.7	11	6.1	24	29,726	48.5
SOUTHERN INTERIOR REGION.....	37	17.5	38	12,455	6.9	38	17.9	47	30,927	17.2	37	17.5	76	123,631	71.7
Arkansas.....	11	12.9	11	3,203	13.1	14	16.5	18	11,628	47.6	1	1.2	2	6,073	24.9
Oklahoma.....	20	21.3	21	7,177	6.8	18	19.1	21	14,796	14.1	26	27.7	57	80,325	76.5
Texas.....	6	18.2	6	2,075	4.1	6	18.2	8	4,505	9.0	10	30.3	17	42,333	84.3
NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS.....	74	16.6	74	24,933	2.4	69	15.5	75	48,873	4.7	99	22.2	151	942,375	91.1
Colorado.....	29	18.0	29	10,336	8.1	26	22.4	37	26,445	20.7	37	23.0	39	85,514	65.9
Montana.....	9	13.4	9	2,875	3.9	6	9.0	6	4,053	5.5	13	19.4	21	64,240	87.9
New Mexico.....	2	9.5	2	720	0.1	2	9.5	4	1,280	0.2	5	23.8	16	637,782	90.5
North Dakota.....	14	17.7	14	4,498	25.4	5	6.3	5	3,501	19.7	3	3.8	3	4,700	26.5
South Dakota.....						1	20.0	1	600	63.2					
Utah.....	7	25.9	7	2,474	5.3	6	22.2	6	4,053	8.7	5	18.5	12	39,494	84.2
Washington.....	5	14.3	5	1,440	2.2	5	14.3	8	3,086	4.6	19	54.3	24	60,598	91.9
Wyoming.....	6	13.0	6	1,850	3.2	6	13.0	6	4,031	7.0	17	37.0	36	49,947	86.3
California, Idaho, and Oregon.....	2	40.0	2	740	28.6	2	40.0	2	1,844	71.2					

PERSONS ENGAGED.

Persons according to class and sex.—Table 26 shows the persons engaged in producing enterprises in the coal-mining industry by classes, gives the number of males and females (except among the wage earners) in each class, and the per cent each class is of the total number of persons engaged in the industry. The statistics are presented for the United States, and separately for anthracite enterprises classified according to the character of operation, and separately by regions for bituminous coal-mining enterprises classified according to the use of mining machines.

For the United States as a whole the salaried employees numbering 40,924 constituted only 5.5 per cent of the total number of persons. The females reported as salaried employees numbered 5,162 which was 12.6 per cent of the total number of salaried employees, and seven-tenths of 1 per cent of the total number of persons employed in the industry. They were mostly in the class "clerks and other subordinate employees" of which they constituted more than one-fourth. The average number of wage earners reported

for the year was 693,170, or 93.9 per cent of the total number of persons. As shown by the figures for the representative day in the table of detailed statistics at the end of this report, females and persons under 16 years of age among the wage earners were negligible in number. The females reported were all employed in the bituminous coal-mining enterprises and the persons under 16 were chiefly (two-thirds) employed in anthracite enterprises. Proprietors and firm members constituted only six-tenths of 1 per cent of the total number of persons engaged in coal mining, and 1,864, or 42.4 per cent of these proprietors, performed manual labor in or about the mines. For the bituminous coal-mining enterprises there are no essential differences between the regions in the proportions of the various classes of persons to the total number. For the enterprises considered according to method of operation the differences in the proportion of the various classes of persons to the total number were slight in most cases. In the anthracite-dredging enterprises there were a relatively larger number of proprietors performing manual labor and consequently

a relatively lower ratio for wage earners. Among the bituminous coal-mining enterprises operating without mining machines the proprietors and firm members were more numerous than in other enterprises. As

a rule, also, the wage earners in enterprises operating without mining machines are proportionately somewhat fewer than other enterprises.

TABLE 26.—PERSONS ENGAGED IN PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO MINING METHOD: 1919.

REGION AND MINING METHOD.	Total.	PROPRIETORS AND FIRM MEMBERS.			SALARIED OFFICERS.			SUPERINTENDENTS AND MANAGERS.			TECHNICAL EMPLOYEES.			CLERKS AND OTHER SUBORDINATE EMPLOYEES.			WAGE EARNERS.		Proportion performing manual labor
		Male	Female	Per cent of total	Male	Female	Per cent of total	Male	Female	Per cent of total	Male	Female	Per cent of total	Male	Female	Per cent of total	Average number.	Per cent of total	
UNITED STATES.....	738,400	4,202	194	0.6	5,983	140	0.8	12,544	27	1.7	3,397	56	0.5	13,858	4,099	2.5	693,170	93.9	1,864
ANTHRACITE (PENNSYLVANIA).....	154,882	149	10	0.1	230	3	0.2	2,819	2	1.8	908	4	0.6	2,773	617	2.2	147,372	95.2	24
Enterprises operating—																			
Mines.....	2,948	1		(1)	7		0.2	77		2.6	26		0.9	50	4	1.8	2,783	94.4	1
Breakers, mines, and washeries.....	150,923	36	9	(1)	203	2	0.1	2,689	2	1.8	875	4	0.6	2,701	603	2.2	143,799	95.3	9
Culm washeries.....	496				12	1	2.6	23		5.6			0.4	13	6	3.8	434	87.5	
River dredges.....	515	112	1	21.9	5		1.6	25		4.9				9	4	2.5	356	69.1	24
BITUMINOUS COAL.....	583,008	4,063	184	0.7	5,733	137	1.0	9,725	25	1.7	2,494	52	0.4	11,085	4,322	2.6	545,798	93.5	1,830
Enterprises without mining machines.....	146,077	3,509	144	2.5	2,210	58	1.6	3,202	8	2.2	485	1	0.3	2,352	890	2.2	133,228	91.2	1,647
Enterprises using mining machines.....	437,531	544	40	0.1	3,523	79	0.8	6,523	17	1.5	2,009	51	0.5	8,733	3,442	2.8	412,570	94.3	183
Northern and Middle Appalachian Regions.....	358,785	2,747	143	0.8	3,769	70	1.1	6,142	12	1.7	1,728	23	0.5	7,203	2,333	2.7	334,615	93.3	1,017
Enterprises without mining machines.....	59,751	2,305	109	4.0	1,243	25	2.1	1,740	1	2.9	242	1	0.4	1,012	446	2.4	52,627	88.1	878
Enterprises using mining machines.....	299,034	442	34	0.2	2,526	45	0.9	4,402	11	1.5	1,486	22	0.5	6,191	1,887	2.7	281,988	94.3	139
Southern Appalachian Region.....	28,800	34	2	0.1	234	8	0.8	383	1	1.3	173	16	0.7	627	148	2.7	27,174	94.4	4
Enterprises without mining machines.....	14,441	34	2	0.2	162	5	1.2	189	1	1.3	48		0.3	261	51	2.2	13,688	94.8	4
Enterprises using mining machines.....	14,359				72	3	0.5	194		1.4	125	16	1.0	366	97	3.2	13,486	93.9	
Michigan Region.....	1,744				13		0.7	32		1.8	8		0.5	27	10	2.1	1,654	94.8	
Enterprises without mining machines.....	17				2		11.8	2		11.8				1		5.9	12	70.6	
Enterprises using mining machines.....	1,727				11		0.6	30		1.7	8		0.5	26	10	2.1	1,642	95.1	
Eastern Interior Region.....	115,415	461	18	0.4	979	32	0.9	1,948	6	1.7	343		0.3	1,832	557	2.1	109,289	94.6	289
Enterprises without mining machines.....	32,118	435	14	1.4	434	14	1.4	597	1	1.9	109		0.3	465	147	1.9	29,902	93.1	279
Enterprises using mining machines.....	83,297	26	4	(1)	545	18	0.7	1,351	5	1.6	234		0.3	1,367	410	2.1	79,387	95.2	10
Western Interior Region.....	27,713	436	10	1.6	299	9	1.1	415	6	1.5	44		0.2	377	164	2.0	25,953	93.6	290
Enterprises without mining machines.....	18,924	395	9	2.1	173	7	1.0	281	5	1.5	32		0.2	260	121	2.0	17,641	93.2	284
Enterprises using mining machines.....	8,789	41	1	0.5	126	2	1.5	134	1	1.5	12		0.1	117	43	1.8	8,312	94.6	15
Southern Interior Region.....	14,253	114	1	0.8	160	6	1.2	301		2.1	29	1	0.2	246	857	7.7	12,588	88.0	86
Enterprises without mining machines.....	9,204	111	1	1.2	112	6	1.3	220		2.4	18		0.2	169	37	2.2	8,580	92.7	85
Enterprises using mining machines.....	5,049	3		0.1	48		1.0	81		1.6	11	1	0.2	77	820	17.8	4,008	79.4	1
Northern Great Plains, Rocky Mountain, and Pacific Coast Regions.....	36,886	261	10	0.7	279	12	0.8	504		1.4	169	12	0.5	773	253	2.8	34,625	93.8	135
Enterprises without mining machines.....	11,622	229	9	2.0	84	1	0.7	173		1.5	36		0.3	184	78	2.3	10,828	93.2	117
Enterprises using mining machines.....	25,276	32	1	0.1	195	11	0.8	331		1.3	133	12	0.6	589	175	3.0	23,797	94.1	18

<sup>1</sup> Less than one-tenth of 1 per cent.

**Wage earners, by occupations.**—Table 27 presents the total number of wage earners, classified according to occupations, employed on December 15<sup>1</sup> or the nearest representative day. The table also gives the percentage distribution by classes and the number in each class employed above and below ground. The statistics are given for each type of anthracite operation in Pennsylvania and separately for bituminous coal-mining enterprises with and without mining machinery, by regions. The table distinguishes between the number engaged in the more peculiarly mining occupations, such as miners, cutters, timbermen, trackmen, trammers, and their helpers; men in other skilled trades, such as enginemen, hoistmen, electricians, firemen, machinists, carpenters, and other mechanics; and less skilled and unclassified laborers.

For the anthracite enterprises as a whole, 21,715 wage earners were reported employed in breakers, culm washeries, and dredges. These employees, representing 14.3 per cent of the total number, were not engaged in mining operations proper. Approximately 70 per cent of all the wage earners in the anthracite

enterprises were reported as employed below ground; but considering only wage earners in mining proper—that is, not including those employed in washeries, breakers, and dredges—the proportion employed below ground was approximately 80 per cent. For all classes of bituminous mining enterprises in the United States as a whole, only four-tenths of 1 per cent of the wage earners were employed in washeries and not in mining operations proper. The proportion of all wage earners employed below ground was 82.4 per cent of the total number of wage earners, but for the individual states and different classes of enterprises the proportion varies, being less as a rule for mines using mining machines and more for mines operating without mining machines. The proportion was generally highest in the Eastern Interior Region, where the mines are mostly shaft mines, and lowest in the Southern Appalachian Region and the Northern Great Plains and Rocky Mountain Regions. The largest class of wage earners reported were the miners, cutters, and others, including their helpers, and next largest class were the laborers and other unclassified wage earners.

TABLE 27.—WAGE EARNERS BY OCCUPATIONS, IN PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO MINING METHOD: 1919.

REGION AND MINING METHOD.	NUMBER OF WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. <sup>1</sup>										
	All classes.					Foremen, shift bosses, etc.		Engineers, hoistmen, electricians, mechanics, etc.			
	Total.	Above ground.		Below ground.		Number.		Per cent of total.	Number.		Per cent of total.
		Number.	Per cent of total.	Number.	Per cent of total.	Above ground.	Below ground.		Above ground.	Below ground.	
UNITED STATES.....	769,646	155,364	20.2	614,282	79.8	5,082	12,020	2.2	43,123	26,775	9.1
ANTHRACITE (PENNSYLVANIA).....	152,243	46,618	30.6	105,625	69.4	435	1,098	1.0	10,488	4,331	9.7
Enterprises operating—											
Mines only.....	3,053	644	21.1	2,409	78.9	7	14	0.7	228	110	11.3
Breakers, mines, and washeries.....	147,972	44,756	30.2	103,216	69.8	388	1,084	1.0	10,050	4,221	9.5
Culm washeries.....	733	733	100.0			33		4.5	94		12.3
River dredges.....	435		100.0			7		1.4	116		23.9
BITUMINOUS COAL.....	617,403	108,746	17.6	508,657	82.4	4,647	10,922	2.5	32,635	22,444	8.5
Enterprises without mining machines.....	102,434	26,813	16.5	135,616	83.5	1,644	2,838	2.8	7,429	2,938	6.4
Enterprises using mining machines.....	454,969	81,928	18.0	373,041	82.0	3,003	8,084	2.4	25,206	19,506	8.3
Northern and Middle Appalachian Regions.....	373,659	69,607	18.6	304,052	81.4	2,887	7,649	2.8	19,550	16,327	9.5
Enterprises without mining machines.....	66,608	12,044	18.1	54,564	81.9	783	1,409	3.3	2,826	1,382	4.1
Enterprises using mining machines.....	307,051	57,563	18.7	249,488	81.3	2,104	6,240	2.7	17,024	14,975	10.4
Southern Appalachian Region.....	28,899	6,824	23.6	22,075	76.4	303	499	2.6	2,052	940	10.4
Enterprises without mining machines.....	14,848	3,564	24.0	11,284	76.0	178	237	2.8	1,016	220	8.3
Enterprises using mining machines.....	14,051	3,260	23.2	10,791	76.8	125	262	2.3	1,036	720	12.5
Michigan Region.....	2,141	304	14.2	1,837	85.8	25	22	2.2	125	67	9.0
Enterprises without mining machines.....	20	7	35.0	13	65.0	1	1	10.0	4		20.0
Enterprises using mining machines.....	2,121	297	14.0	1,824	86.0	24	21	2.1	121	67	8.9
Eastern Interior Region.....	127,185	15,665	12.3	111,520	87.7	722	1,573	1.8	5,863	3,365	7.3
Enterprises without mining machines.....	37,061	4,171	11.3	32,890	88.7	280	519	2.2	1,655	754	6.5
Enterprises using mining machines.....	90,124	11,494	12.8	78,630	87.2	442	1,054	1.7	4,198	2,611	7.6
Western Interior Region.....	30,788	4,961	16.2	25,827	83.8	268	330	2.1	1,413	249	5.4
Enterprises without mining machines.....	20,853	2,818	11.1	18,035	88.9	169	265	2.1	784	124	4.3
Enterprises using mining machines.....	9,935	2,143	26.9	7,792	78.1	99	165	2.2	629	125	7.6
Southern Interior Region.....	15,045	2,641	17.6	12,404	82.4	134	247	2.5	942	177	7.4
Enterprises without mining machines.....	10,329	1,748	16.9	8,581	83.1	97	168	2.6	599	126	6.8
Enterprises using mining machines.....	4,716	893	18.9	3,823	81.1	37	79	2.5	373	41	8.8
Northern Great Plains, Rocky Mountain, and Pacific Coast Regions.....	39,691	8,724	22.0	30,967	78.0	308	612	2.3	2,690	1,308	10.1
Enterprises without mining machines.....	12,685	2,966	23.4	9,719	76.6	126	239	3.0	865	342	9.5
Enterprises using mining machines.....	27,006	5,758	21.3	21,248	78.7	172	373	2.0	1,825	967	10.3

REGION AND MINING METHOD.	NUMBER OF WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. <sup>1</sup>										
	Miners, cutters, etc., including their helpers.			Timbermen, trackmen, and men engaged in hauling, etc.			Laborers and others not classified.			In breakers and washeries.	
	Number.			Number.			Number.			Number.	Per cent of total.
	Above ground.	Below ground.	Per cent of total.	Above ground.	Below ground.	Per cent of total.	Above ground.	Below ground.	Per cent of total.		
UNITED STATES.....	7,163	354,485	47.0	17,502	116,905	17.5	59,448	104,197	21.3	23,051	3.0
ANTHRACITE (PENNSYLVANIA).....	138	59,401	39.1	2,769	17,325	13.2	12,291	23,470	23.5	20,497	13.5
Enterprises operating—											
Mines only.....	71	1,494	51.3	65	473	17.6	273	318	19.4		
Breakers, mines, and washeries.....	67	57,907	39.2	2,704	16,852	13.2	11,050	23,152	23.1	20,497	13.6
Culm washeries.....							606		82.7		
River dredges.....							363		74.6		
BITUMINOUS COAL.....	7,025	295,084	48.9	14,733	99,480	18.5	47,152	80,727	20.7	2,554	0.4
Enterprises without mining machines.....	2,753	92,525	58.7	4,279	26,834	19.2	9,669	10,431	12.4	1,044	0.6
Enterprises using mining machines.....	4,272	202,559	45.5	10,454	72,646	18.3	37,483	70,296	26.7	1,510	0.3
Northern and Middle Appalachian Regions.....	4,849	173,817	47.8	9,957	56,926	17.9	31,848	49,323	21.7	516	0.1
Enterprises without mining machines.....	1,648	38,301	60.0	2,254	9,119	17.1	4,643	4,373	13.5	190	0.3
Enterprises using mining machines.....	3,201	135,516	45.2	7,703	47,807	18.1	27,205	44,950	23.5	326	0.1
Southern Appalachian Region.....	402	13,563	45.3	999	4,170	17.9	1,982	2,963	17.1	1,036	3.3
Enterprises without mining machines.....	228	7,811	54.1	609	2,194	18.9	1,016	822	12.4	517	3.5
Enterprises using mining machines.....	174	5,752	42.2	390	1,976	16.8	966	2,141	22.1	589	4.0
Michigan Region.....	10	1,295	61.0	24	345	17.2	120	106	10.6		
Enterprises without mining machines.....		12	60.0	2		10.0					
Enterprises using mining machines.....	10	1,283	61.0	22	345	17.3	120	106	10.7		
Eastern Interior Region.....	532	61,868	49.1	1,418	24,206	20.1	6,584	20,506	21.3	546	0.4
Enterprises without mining machines.....	176	21,247	57.8	476	7,563	21.8	1,441	2,777	11.4	133	0.4
Enterprises using mining machines.....	356	40,621	45.5	942	16,643	19.5	5,143	17,731	25.4	413	0.4
Western Interior Region.....	541	17,006	59.0	783	5,398	20.1	1,929	2,169	13.3	47	0.2
Enterprises without mining machines.....	273	13,210	64.6	370	3,967	20.8	675	999	8.0	47	0.2
Enterprises using mining machines.....	268	4,396	47.1	413	1,431	18.6	1,254	1,170	24.5		
Southern Interior Region.....	371	8,176	56.8	388	2,741	20.8	780	1,063	12.2	26	0.2
Enterprises without mining machines.....	305	5,589	57.1	273	1,964	21.9	478	704	11.4	26	0.3
Enterprises using mining machines.....	66	2,587	56.3	115	757	18.5	302	359	14.0		
Northern Great Plains, Rocky Mountain, and Pacific Coast Regions.....	320	18,759	48.1	1,164	5,694	17.3	3,909	4,593	21.4	333	0.6
Enterprises without mining machines.....	123	6,355	51.1	295	1,977	17.9	1,416	806	17.5	131	1.0
Enterprises using mining machines.....	197	12,404	46.7	869	3,717	17.0	2,493	3,787	23.3	202	0.7

<sup>1</sup> On account of the strike in November and December many of the enterprises reported for October 15 or some other date in October, or an earlier month.

Wage earners, by months.—Table 28 shows, for producing enterprises by regions and states and for non-producing enterprises by states, the number of wage earners employed on the fifteenth day of each month or the nearest representative day, the average number of wage earners employed during the year, the months of maximum and minimum employment, and the ratio of the minimum to the maximum number. The changes in the number employed from month to month reflect conditions prevailing in the coal-mining industry during the year. In anthracite mining there was only slight fluctuation from month to month. The seasons of minimum and maximum employment were normal. In the statistics for bituminous-coal mining the great strike of November and December, 1919, is reflected by the figures for the United States and most of the states not only by the occurrence of the minimum figure in November but also by the maximum in October, as productive operations were in that month forced to a maximum in anticipation of the strike. The figures for each of

the important coal-mining states except Virginia and West Virginia show similar minima for November and some also maxima in October although others show normal maxima in January. In Virginia and West Virginia where there are important nonunion fields the minimum of employment occurred in the spring months which is normal and the ratios of minimum to maximum number of wage earners employed by months were 83 and 84 per cent, respectively, as compared with the ratios of approximately 21, 55, and 13 per cent in Ohio, Pennsylvania, and Illinois. On account of extent of unemployment in November, and in some states in December also, the number of wage earners as measured by the average of the number employed on a representative day of each of the 12 months is not a fair measure of wage earners employed in bituminous-coal mining in 1919. A better approximation is the average of the first ten months of the year which was nearly 20,000 or about 4 per cent greater than the average for the 12 months.

TABLE 28.—WAGE EARNERS, BY MONTHS, ALL ENTERPRISES, BY REGIONS AND STATES: 1919.  
(The month of maximum employment for each region and state is indicated by bold-faced figures and that of minimum employment by italicized figures.)

REGION AND STATE.	Average number employed during year.	NUMBER EMPLOYED ON THE 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>UNITED STATES.....</b>	<b>693,641</b>	<b>726,316</b>	<b>708,078</b>	<b>693,831</b>	<b>675,651</b>	<b>680,326</b>	<b>687,089</b>	<b>715,757</b>	<b>732,847</b>	<b>743,451</b>	<b>751,123</b>	<b>469,695</b>	<b>739,571</b>	<b>61.2</b>
Producing enterprises.....	693,170	726,106	707,846	693,563	675,373	680,085	686,657	715,294	732,340	742,826	750,387	<b>468,800</b>	738,744	61.1
Anthracite (Pennsylvania).....	147,372	148,241	145,965	143,487	<i>149,691</i>	144,925	145,010	143,297	140,220	140,522	150,847	150,594	<b>151,595</b>	94.1
Bituminous coal.....	545,798	580,864	561,881	550,126	525,982	535,110	541,847	569,597	592,120	602,304	600,540	<b>306,806</b>	567,149	51.4
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS.....</b>	<b>324,615</b>	<b>360,068</b>	<b>328,781</b>	<b>323,968</b>	<b>318,089</b>	<b>324,747</b>	<b>324,185</b>	<b>322,524</b>	<b>323,551</b>	<b>325,876</b>	<b>328,688</b>	<b>289,609</b>	<b>357,306</b>	<b>62.7</b>
Pennsylvania.....	154,902	165,588	158,465	155,116	151,807	150,261	154,825	162,681	168,107	168,972	167,191	26,338	168,378	54.9
West Virginia.....	87,026	87,044	80,378	79,740	80,329	83,650	85,670	90,496	92,194	93,614	98,759	83,779	94,887	84.6
Ohio.....	40,453	43,305	40,357	39,890	39,465	41,630	43,165	44,175	46,698	47,853	47,195	9,537	42,470	20.3
Kentucky, eastern.....	28,789	28,783	26,392	26,371	26,165	27,060	28,091	31,231	31,846	31,296	33,333	24,135	31,785	74.6
Virginia, eastern.....	11,315	11,759	11,343	10,470	9,974	10,242	10,513	11,334	11,696	11,750	11,698	11,645	11,855	83.1
Tennessee, northeastern.....	7,345	8,237	7,132	6,802	6,593	7,476	7,680	7,838	7,894	7,766	8,008	8,457	7,717	42.1
Maryland.....	4,836	5,287	4,714	4,514	4,356	4,528	4,541	4,769	5,121	5,225	5,239	4,308	5,235	80.7
<b>SOUTHERN APPALACHIAN REGION.....</b>	<b>27,174</b>	<b>23,295</b>	<b>23,483</b>	<b>23,299</b>	<b>27,978</b>	<b>26,344</b>	<b>26,925</b>	<b>27,107</b>	<b>26,990</b>	<b>27,168</b>	<b>28,104</b>	<b>24,355</b>	<b>27,465</b>	<b>78.7</b>
Alabama.....	24,648	25,762	25,784	26,896	26,558	24,398	24,442	24,612	24,445	24,548	25,402	20,398	24,722	78.7
Tennessee, southeastern, Georgia, and North Carolina.....	2,626	2,633	2,644	2,484	2,420	2,446	2,493	2,495	2,445	2,620	2,702	3,957	2,743	76.1
<b>MICHIGAN REGION.....</b>	<b>1,654</b>	<b>2,047</b>	<b>2,298</b>	<b>2,088</b>	<b>533</b>	<b>1,666</b>	<b>1,617</b>	<b>1,801</b>	<b>1,788</b>	<b>1,987</b>	<b>2,049</b>	<b>178</b>	<b>1,996</b>	<b>7.9</b>
<b>EASTERN INTERIOR REGION.....</b>	<b>106,239</b>	<b>124,612</b>	<b>120,503</b>	<b>116,974</b>	<b>111,070</b>	<b>110,135</b>	<b>108,375</b>	<b>112,099</b>	<b>115,809</b>	<b>121,063</b>	<b>124,799</b>	<b>81,368</b>	<b>123,273</b>	<b>17.6</b>
Illinois.....	73,789	84,197	82,192	80,214	76,796	74,761	73,004	76,062	78,218	81,362	83,739	11,383	82,002	13.4
Indiana.....	24,479	28,569	26,812	25,389	23,881	24,808	24,355	25,403	26,518	28,051	28,871	3,390	27,790	11.6
Kentucky, western.....	10,980	12,056	11,496	11,371	10,443	10,666	10,416	10,644	11,073	11,650	12,189	7,373	13,581	57.3
<b>WESTERN INTERIOR REGION.....</b>	<b>25,953</b>	<b>31,744</b>	<b>31,135</b>	<b>29,719</b>	<b>27,400</b>	<b>26,549</b>	<b>26,190</b>	<b>26,975</b>	<b>26,083</b>	<b>27,019</b>	<b>27,775</b>	<b>4,436</b>	<b>26,342</b>	<b>14.0</b>
Iowa.....	10,584	12,879	12,554	12,154	10,634	10,192	9,898	10,173	10,989	11,570	12,100	4,387	11,410	19.6
Kansas.....	8,084	9,738	9,610	9,593	9,292	9,216	9,151	9,136	7,913	7,818	7,802	682	7,237	5.4
Missouri.....	7,285	9,127	8,971	7,932	7,534	7,141	7,162	7,667	7,240	7,631	7,573	1,387	7,695	15.3
<b>SOUTHERN INTERIOR REGION.....</b>	<b>12,533</b>	<b>13,678</b>	<b>13,316</b>	<b>12,428</b>	<b>12,482</b>	<b>12,739</b>	<b>12,659</b>	<b>13,009</b>	<b>14,255</b>	<b>14,712</b>	<b>14,687</b>	<b>3,733</b>	<b>13,108</b>	<b>19.0</b>
Oklahoma.....	7,040	7,896	7,589	6,950	7,205	7,387	7,293	7,512	7,839	8,102	8,299	982	7,764	11.6
Arkansas.....	2,787	2,944	2,682	2,490	2,332	2,433	2,549	3,307	3,635	3,918	3,859	474	2,801	12.1
Texas.....	2,711	3,138	3,075	2,983	2,944	2,919	2,917	2,790	2,740	2,902	2,529	1,359	2,533	43.1
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS.....</b>	<b>34,625</b>	<b>39,125</b>	<b>37,422</b>	<b>36,673</b>	<b>34,470</b>	<b>32,510</b>	<b>31,677</b>	<b>32,782</b>	<b>34,647</b>	<b>35,629</b>	<b>36,050</b>	<b>26,916</b>	<b>37,659</b>	<b>63.3</b>
Colorado.....	11,262	12,023	11,566	11,440	11,131	10,547	10,269	10,983	11,490	11,511	11,224	10,089	12,804	73.3
Wyoming.....	7,091	8,445	7,963	7,621	6,972	6,358	6,177	6,186	6,688	6,999	7,539	6,570	7,319	72.4
Washington.....	4,413	5,299	5,245	5,195	4,885	4,698	4,581	4,575	4,652	4,814	4,714	1,013	3,867	19.4
Montana.....	3,797	4,484	4,101	4,107	3,732	3,601	3,613	3,807	4,029	4,178	4,579	1,124	4,429	25.2
Utah.....	2,647	3,728	3,694	3,417	3,295	3,204	3,255	3,531	3,731	3,791	3,841	4,056	4,389	75.2
New Mexico.....	3,564	4,689	3,840	4,090	3,773	3,641	3,364	3,127	3,455	3,305	3,541	2,387	3,716	74.1
North Dakota.....	774	1,011	873	807	696	697	473	518	550	576	581	1,054	1,158	40.9
South Dakota.....	8	16	11	13	6	6	.....	.....	8	6	10	13	15	12.5
Oregon, Idaho, and California.....	79	145	148	73	69	60	55	80	80	69	71	68	91	34.2
Nonproducing enterprises.....	471	811	232	268	378	291	332	463	507	625	735	833	827	25.3
<b>Pennsylvania.....</b>	<b>109</b>	<b>83</b>	<b>80</b>	<b>81</b>	<b>49</b>	<b>44</b>	<b>59</b>	<b>101</b>	<b>99</b>	<b>122</b>	<b>181</b>	<b>248</b>	<b>373</b>	<b>3.4</b>
West Virginia.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	41.4
All other states.....	249	188	202	217	229	247	299	343	396	453	530	588	626	22.7

1 Includes states listed in order of wage earners as follows: Ohio, Kentucky, Washington, Iowa, Kansas, Colorado, Illinois, Texas, Virginia, and Oregon.

It will be noted that the number of wage earners reported for all bituminous-coal enterprises on a representative day which is presented in several tables aggregated 617,403 and is larger than the number shown for any month in Table 28. The representative day and month selected for reporting wage earners in detail varied with the individual enterprise, therefore the aggregate for the representative day differs from the total of the numbers reported by the several enterprises in any month.

**Days in operation.**—The number of working days during the census year varied considerably for different enterprises in the coal-mining industry and in different states. Table 29 gives by states for producing and nonproducing enterprises in anthracite and

bituminous-coal mining the distribution of enterprises according to the number of days in operation in 1919. The table shows for anthracite enterprises that only 7 worked full time (301 days or more), but nearly one-half of the enterprises were in operation more than three-fourths of the full time (from 226 to 300 days).

Among the productive bituminous coal-mining enterprises about 4 per cent were in operation full time, about one-third of the enterprises were in operation less than half time, and somewhat more than one-third were in operation for periods ranging from 151 to 225 days. The percentage of short-time operation was greater in the Appalachian and Interior Regions than in the regions of the West.

TABLE 29.—ALL ENTERPRISES, CLASSIFIED ACCORDING TO TIME IN OPERATION: 1919.

REGION AND STATE.	Total number of enterprises.	ENTERPRISES OPERATING—				
		75 days and less.	76 to 150 days.	151 to 225 days.	226 to 300 days.	301 days and over.
UNITED STATES.....	6,916	474	1,787	2,623	1,779	253
Producing enterprises.....	6,800	473	1,777	2,617	1,772	251
Anthracite (Pennsylvania).....	254	30	33	61	123	7
Bituminous coal.....	6,546	443	1,744	2,556	1,649	244
NORTHERN AND MIDDLE APPALACHIAN REGION:						
Kentucky, eastern.....	460	57	147	178	76	11
Maryland.....	58	6	21	20	10	1
Ohio.....	788	82	281	293	146	36
Pennsylvania.....	1,938	97	460	679	625	77
Tennessee, northeastern.....	92	6	27	42	14	3
Virginia.....	108	9	24	33	41	1
West Virginia.....	926	60	212	411	222	21
SOUTHERN APPALACHIAN REGION:						
Alabama.....	188	8	33	65	60	13
Georgia, North Carolina, and Tennessee, southeastern.....	17	2	3	4	8	.....
MICHIGAN REGION.....	11	.....	1	9	1	.....
EASTERN INTERIOR REGION:						
Illinois.....	447	26	121	217	71	12
Indiana.....	295	31	121	105	41	7
Kentucky, western.....	166	14	58	63	27	4
WESTERN INTERIOR REGION:						
Iowa.....	167	8	37	99	20	3
Kansas.....	129	5	51	47	21	5
Missouri.....	179	8	44	63	55	9
SOUTHERN INTERIOR REGION:						
Arkansas.....	85	17	40	25	2	1
Oklahoma.....	94	1	25	54	12	2
Texas.....	33	.....	6	9	17	1
NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS:						
Colorado.....	161	7	20	41	83	10
Montana.....	67	4	15	25	13	10
New Mexico.....	21	1	3	1	13	3
North Dakota.....	79	2	23	31	18	5
South Dakota.....	5	1	.....	2	2	.....
Utah.....	27	.....	4	11	10	2
Washington.....	35	.....	5	16	11	3
Wyoming.....	46	.....	10	12	20	4
California, Idaho, and Oregon.....	5	1	2	1	1	.....
Nonproducing enterprises.....	26	1	10	6	7	2
Pennsylvania.....	10	.....	5	1	3	1
West Virginia.....	3	.....	2	1	.....	.....
All other states.....	13	1	3	4	4	1

**Prevailing hours of labor.**—Table 30 presents for producing enterprises by regions and by states and for nonproducing enterprises by states, and separately for anthracite and bituminous coal mines, a classification of enterprises according to the prevailing hours of labor per week reported by them and shows the distribution of enterprises and wage earners for each class. In the coal-mining industry different hours for different classes of wage earners may prevail in some localities, but in the tabulation of census statistics the wage earners of each enterprise were classed as a unit in accordance with the hours reported as prevailing for the majority, regardless of the fact that some worked more or fewer hours. The percentages in Table 30 therefore can not be taken as showing precisely the relative number of wage earners working the number of hours specified, but may be taken merely as ap-

proximating the general distribution of wage earners according to hours of labor. Enterprises employing no wage earners are not included in the table.

The normal hours of labor in the coal-mining industry generally were 44 to 53 per week, and in fact were 48—the 8-hour day and the 6-day week prevailing. Among the anthracite enterprises the exceptions to these prevailing hours were almost entirely reported by those who operated only culm washeries and dredges. In bituminous-coal mining other hours than those generally prevailing were reported by a considerable number of enterprises in fully half of the states, but the wage earners employed in such enterprises were relatively quite few in number except in West Virginia, eastern Kentucky, northeastern Tennessee, Alabama, Arkansas, Texas, Utah, and South Dakota.

TABLE 30.—NUMBER OF PRODUCING AND OF NONPRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR: 1919.

REGION AND STATE.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enter-prises.	Wage earners (average number).	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 and over.	
			Enter-prises.	Wage earners (average number).	Enter-prises.	Wage earners (average number).	Enter-prises.	Wage earners (average number).	Enter-prises.	Wage earners (average number).	Enter-prises.	Wage earners (average number).
UNITED STATES.....	1 6,851	693,641	257	15,978	426	17,478	5,743	631,761	406	26,100	19	2,324
Per cent distribution.....	100.0	100.0	3.8	2.3	6.2	2.5	83.8	91.1	5.9	3.8	0.3	0.3
Producing enterprises.....	6,826	693,170	257	15,978	426	17,478	5,722	631,361	402	26,029	19	2,324
Per cent distribution.....	100.0	100.0	3.8	2.3	6.2	2.5	83.8	91.1	5.9	3.8	0.3	0.3
Anthracite (Pennsylvania).....	252	147,372	.....	.....	1	315	176	145,787	71	807	4	483
Per cent distribution.....	100.0	100.0	.....	.....	0.4	0.2	69.8	98.9	23.2	0.5	1.6	0.3
Bituminous coal.....	6,574	545,798	257	15,978	425	17,163	5,546	485,574	331	25,222	15	1,861
Per cent distribution.....	100.0	100.0	3.9	2.9	6.5	3.1	84.4	89.0	5.0	4.6	0.2	0.3
NORTHERN AND MIDDLE APPALACHIAN REGIONS:												
Pennsylvania.....	1,927	154,992	40	759	63	1,098	1,708	143,357	108	8,001	10	1,777
Per cent distribution.....	100.0	100.0	2.1	0.5	3.3	0.7	88.5	92.5	5.6	5.2	0.5	1.1
West Virginia.....	923	87,095	30	2,028	46	3,170	801	74,125	47	7,702	2	70
Per cent distribution.....	100.0	100.0	3.2	2.3	5.0	3.6	86.5	85.1	5.1	8.8	0.2	0.1
Ohio.....	761	40,452	20	350	42	478	675	38,968	24	658	.....	.....
Per cent distribution.....	100.0	100.0	2.6	0.9	5.5	1.2	83.7	96.3	3.2	1.6	.....	.....
Kentucky, eastern.....	483	28,789	49	1,711	55	1,734	304	20,487	60	4,857	.....	.....
Per cent distribution.....	100.0	100.0	10.5	5.9	11.8	6.0	65.0	71.2	12.8	16.9	.....	.....
Virginia.....	108	11,215	4	105	5	310	84	10,413	13	375	2	12
Per cent distribution.....	100.0	100.0	3.7	0.9	4.6	2.8	77.8	92.8	12.0	3.3	1.9	0.1
Tennessee, northeastern.....	92	7,246	7	378	21	1,069	62	5,566	2	233	.....	.....
Per cent distribution.....	100.0	100.0	7.6	5.2	22.8	14.8	67.4	76.8	2.2	3.2	.....	.....
Maryland.....	58	4,826	.....	.....	6	133	51	4,608	1	25	.....	.....
Per cent distribution.....	100.0	100.0	.....	.....	10.3	2.8	87.9	96.7	1.7	0.5	.....	.....
SOUTHERN APPALACHIAN REGION:												
Alabama.....	188	24,648	9	185	62	3,765	122	20,045	5	653	.....	.....
Per cent distribution.....	100.0	100.0	4.8	0.8	27.7	15.3	64.9	81.3	2.7	2.6	.....	.....
Tennessee, southeastern, Georgia, and North Carolina.....	17	2,526	1	77	1	8	15	2,441	.....	.....	.....	.....
Per cent distribution.....	100.0	100.0	5.9	3.0	5.9	0.3	88.2	96.6	.....	.....	.....	.....
MICHIGAN REGION:												
.....	11	1,654	.....	.....	.....	.....	11	1,654	.....	.....	.....	.....
Per cent distribution.....	100.0	100.0	.....	.....	.....	.....	100.0	100.0	.....	.....	.....	.....
EASTERN INTERIOR REGION:												
Illinois.....	444	73,780	27	5,910	19	2,846	301	64,905	7	119	.....	.....
Per cent distribution.....	100.0	100.0	6.1	8.0	4.3	3.9	88.1	88.0	1.6	0.2	.....	.....
Indiana.....	283	24,479	37	3,253	15	330	284	20,890	2	6	.....	.....
Per cent distribution.....	100.0	100.0	12.8	13.3	5.2	1.3	81.2	85.3	0.7	( <sup>2</sup> )	.....	.....
Kentucky, western.....	168	10,980	2	7	11	266	135	10,489	18	218	.....	.....
Per cent distribution.....	100.0	100.0	1.2	0.1	6.6	2.4	81.3	95.5	10.8	2.0	.....	.....
WESTERN INTERIOR REGION:												
Iowa.....	165	10,584	2	11	14	117	149	10,456	.....	.....	.....	.....
Per cent distribution.....	100.0	100.0	1.2	0.1	8.5	1.1	90.3	98.8	.....	.....	.....	.....
Kansas.....	128	8,084	4	29	3	18	121	8,039	.....	.....	.....	.....
Per cent distribution.....	100.0	100.0	3.1	0.4	2.8	0.2	94.5	99.4	.....	.....	.....	.....
Missouri.....	178	7,285	9	69	18	253	142	6,746	9	217	.....	.....
Per cent distribution.....	100.0	100.0	5.1	0.9	10.1	3.5	79.8	92.6	5.1	3.0	.....	.....
SOUTHERN INTERIOR REGION:												
Oklahoma.....	93	7,040	7	837	5	100	77	6,014	4	89	.....	.....
Per cent distribution.....	100.0	100.0	7.5	11.9	5.4	1.4	82.8	85.4	4.3	1.3	.....	.....
Arkansas.....	85	2,787	2	69	25	720	67	1,979	1	19	.....	.....
Per cent distribution.....	100.0	100.0	2.4	2.5	29.4	25.8	67.1	71.0	1.2	0.7	.....	.....
Texas.....	33	2,711	1	56	7	515	20	1,969	5	181	.....	.....
Per cent distribution.....	100.0	100.0	3.0	2.1	21.2	19.0	60.6	72.3	15.2	6.7	.....	.....
NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS:												
Colorado.....	160	11,252	2	97	4	109	148	10,700	6	346	.....	.....
Per cent distribution.....	100.0	100.0	1.2	0.9	2.5	1.0	92.5	95.1	3.8	3.1	.....	.....
Wyoming.....	46	7,091	.....	.....	1	16	44	7,033	1	42	.....	.....
Per cent distribution.....	100.0	100.0	.....	.....	2.2	0.2	95.7	99.2	2.2	0.6	.....	.....
Washington.....	35	4,413	1	2	.....	.....	34	4,411	.....	.....	.....	.....
Per cent distribution.....	100.0	100.0	2.9	( <sup>1</sup> )	.....	.....	97.1	100.0	.....	.....	.....	.....
Montana.....	66	3,797	1	24	5	38	55	3,718	5	17	.....	.....
Per cent distribution.....	100.0	100.0	1.5	0.6	7.6	1.0	83.3	97.9	7.6	0.4	.....	.....
Utah.....	27	3,647	1	7	4	65	16	2,143	5	1,430	1	2
Per cent distribution.....	100.0	100.0	3.7	0.2	14.8	1.8	59.3	58.8	18.5	39.2	3.7	0.1
New Mexico.....	20	3,564	.....	.....	.....	.....	19	3,556	1	8	.....	.....
Per cent distribution.....	100.0	100.0	.....	.....	.....	.....	95.0	99.8	5.0	0.2	.....	.....
North Dakota.....	78	774	1	14	2	7	67	730	6	23	.....	.....
Per cent distribution.....	100.0	100.0	1.3	1.8	2.6	0.9	88.2	94.3	7.9	3.0	.....	.....
South Dakota.....	3	8	.....	.....	1	2	1	3	1	3	.....	.....
Per cent distribution.....	100.0	100.0	.....	.....	33.3	25.0	33.3	37.5	33.3	37.5	.....	.....
Oregon, Idaho, and California.....	5	79	.....	.....	.....	.....	5	79	.....	.....	.....	.....
Per cent distribution.....	100.0	100.0	.....	.....	.....	.....	100.0	100.0	.....	.....	.....	.....
Nonproducing enterprises.....	25	471	.....	.....	.....	.....	21	400	4	71	.....	.....
Per cent distribution.....	100.0	100.0	.....	.....	.....	.....	84.0	84.9	10.0	15.1	.....	.....
Pennsylvania.....	9	109	.....	.....	.....	.....	9	109	.....	.....	.....	.....
Per cent distribution.....	100.0	100.0	.....	.....	.....	.....	100.0	100.0	.....	.....	.....	.....
West Virginia.....	3	13	.....	.....	.....	.....	3	13	.....	.....	.....	.....
Per cent distribution.....	100.0	100.0	.....	.....	.....	.....	100.0	100.0	.....	.....	.....	.....
All other states <sup>1</sup> .....	13	349	.....	.....	.....	.....	9	278	4	71	.....	.....
Per cent distribution.....	100.0	100.0	.....	.....	.....	.....	69.2	79.7	30.8	20.3	.....	.....

<sup>1</sup> Exclusive of 65 enterprises—producing, 64, and nonproducing, 1—employing no wage earners.

<sup>2</sup> Less than one-tenth of 1 per cent.

<sup>3</sup> Includes states listed in order of wage earners as follows: Ohio, Kentucky, Washington, Iowa, Kansas, Colorado, Illinois, Texas, Virginia, and Oregon.

LAND TENURE AND ROYALTIES.

Extent of holdings.—Table 31 gives the aggregate acreage held by anthracite and bituminous coal-mining enterprises, both producing and nonproducing, in each state and shows, in addition to the acreage of coal land owned and held under lease, the extent of coal land operated and of timber and other lands controlled. In this table, and in others relating to acreage, the number of acres of mineral land con-

trolled by the mining enterprises is greater by the amount of acreage leased to other operators and by the idle acreage, than the number of acres reported operated. The average holding of coal land per enterprise for the 155 producing anthracite enterprises which operated mines was approximately 1,760 acres and for the 6,636 productive bituminous coal-mining enterprises was 1,250. There was, however, great variation in the extent of holdings of single enterprises, as shown in Tables 24 and 25.

TABLE 31.—LAND OPERATED AND CONTROLLED, PRODUCING AND NONPRODUCING ENTERPRISES: 1919.

STATE.	Coal land operated (acres).	LAND CONTROLLED.				Timber and other lands (acres).
		Aggregate (acres).	Coal land.			
			Total (acres).	Owued (acres).	Held under lease (acres).	
UNITED STATES.....	8,547,434	9,530,545	8,619,265	6,002,358	2,616,907	911,280
Producing.....	8,522,727	9,505,741	8,594,558	5,988,041	2,606,617	911,183
Anthracite (Pennsylvania).....	261,355	432,055	272,345	194,390	77,955	159,710
Bituminous coal.....	8,261,372	9,073,686	8,322,213	5,793,651	2,528,662	751,473
Alabama.....	653,793	701,760	654,633	563,894	90,739	47,127
Arkansas.....	24,421	25,322	24,496	12,226	12,270	826
Colorado.....	127,831	131,838	128,181	89,606	38,573	3,657
Illinois.....	752,316	799,060	754,235	596,082	158,153	44,826
Indiana.....	176,200	189,594	179,511	106,768	72,748	10,083
Iowa.....	66,359	71,117	67,604	31,662	35,942	3,513
Kansas.....	73,559	86,650	74,509	30,629	43,880	14,141
Kentucky.....	731,116	832,007	731,411	461,374	280,037	100,696
Maryland.....	53,442	60,714	53,486	34,168	19,318	7,228
Michigan.....	9,169	10,529	9,169	1,921	7,248	1,360
Missouri.....	61,317	62,337	61,417	30,230	31,178	940
Montana.....	73,967	82,266	75,287	55,124	20,163	6,979
New Mexico.....	641,126	657,160	641,125	614,619	26,506	16,035
North Dakota.....	17,734	18,558	17,734	9,305	8,429	824
Ohio.....	442,837	488,852	461,494	348,214	113,280	27,358
Oklahoma.....	104,936	110,536	105,068	26,729	78,339	5,468
Pennsylvania.....	1,491,919	1,682,398	1,494,676	1,112,956	381,720	187,722
Tennessee.....	293,364	385,117	294,384	165,067	129,317	70,733
Texas.....	50,124	135,288	50,154	32,433	17,721	85,134
Utah.....	46,891	56,665	47,051	44,532	2,519	9,614
Virginia.....	367,976	407,324	399,015	312,376	86,639	8,300
Washington.....	65,940	80,958	66,180	44,368	21,812	14,778
West Virginia.....	1,834,207	1,940,557	1,890,664	1,022,574	838,090	79,893
Wyoming.....	57,562	60,842	57,562	44,526	13,036	3,220
All other states <sup>1</sup> .....	18,167	14,217	13,167	12,262	905	1,050
Nonproducing.....	24,707	24,804	24,707	14,317	10,390	97
Kentucky.....	5,030	5,059	5,030	3,800	1,730	29
Pennsylvania.....	8,722	8,786	8,722	6,946	1,776	63
West Virginia.....	3,418	3,418	3,418	2,088	1,330	.....
All other states <sup>2</sup> .....	7,537	7,542	7,537	1,983	5,554	5

<sup>1</sup> Includes California, Georgia, Idaho, North Carolina, Oregon, and South Dakota.  
<sup>2</sup> Includes Colorado, Illinois, Iowa, Kansas, Ohio, Oregon, Texas, Virginia, and Washington.

Enterprises and acreage according to tenure of coal land.—Table 32 shows for enterprises classified according to the form of tenure of coal land, and by mining regions and states, for both producing and nonproducing anthracite and bituminous coal mines, the number of enterprises and the number of acres of coal land controlled. The table also shows the percentage the total owned acreage is of the aggregate coal land controlled and the percentage that the acreage held by each class of enterprises is of the aggregate coal land controlled.

For all coal mines in the United States, 69.6 per cent of the total coal land reported in 1919 was owned by the operators and 30.4 per cent was held under lease.

These percentages prevailed also for bituminous coal enterprises separately considered, but for anthracite enterprises the percentages were 71.4 per cent for owned land and 28.6 per cent for land held under lease. The percentage of owned acreage ranged among the bituminous coal-mining states from 21 in Michigan to 95.9 in New Mexico. In the Appalachian Region as a whole the percentage of owned land was 67.1 per cent; in the Interior Regions it was 67.3 per cent but was less in most of the states of these regions, and in the Northern Great Plains, Rocky Mountain, and Pacific Coast Regions it was 87.3 per cent. It is noteworthy that the largest percentage of owned acreage is reported from the far western regions.



A majority of the anthracite-mining enterprises operated only on land held under lease but they controlled only 13.4 per cent of the aggregate anthracite acreage. A few enterprises operated only on land held by ownership and these controlled 12.7 per cent of the aggregate acreage, and one-third of the anthracite-mining enterprises operated on land held under both forms of tenure and controlled 73.9 per cent of the aggregate acreage.

A little more than one-third of the bituminous coal-mining enterprises in the United States operated

only on land held by ownership but they controlled 51.1 per cent of the aggregate bituminous-coal acreage, whereas about one-half of the bituminous coal-mining enterprises operated only on land held under lease and they controlled 22 per cent of the aggregate acreage. The remaining bituminous coal-mining enterprises, less than one-sixth, operated on land under both forms of tenure and controlled 26.9 per cent of the aggregate acreage. Among the several coal-mining states the proportions of coal land operated under different forms of tenure ranged between wide limits.

TABLE 32.—COAL LAND CONTROLLED BY PRODUCING AND NONPRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO FORM OF TENURE: 1919.

REGION AND STATE.	ALL CLASSES.				ENTERPRISES OPERATING ONLY OWNED LAND.			ENTERPRISES OPERATING ONLY LAND HELD UNDER LEASE.			ENTERPRISES OPERATING LAND PARTLY OWNED AND PARTLY HELD UNDER LEASE.					
	Number of enterprises.	Acres controlled.			Number.	Acres controlled.		Number.	Acres controlled.		Number.	Acres controlled.				
		Aggregate.	By ownership.	By lease.		Per cent owned is of aggregate.	By ownership.		Per cent owned is of aggregate.	By lease.		Per cent leased is of aggregate.	Total.	Per cent of aggregate.	By ownership.	By lease.
UNITED STATES.....	46,817	8,619,265	6,002,358	2,616,907	66.6	2,358	4,295,769	49.8	3,434	1,872,587	21.7	1,025	2,450,909	28.4	1,706,589	744,320
Producing enterprises.....	46,791	8,594,558	5,988,041	2,606,517	66.6	2,348	4,289,204	49.9	3,425	1,865,997	21.7	1,018	2,439,357	28.4	1,698,837	740,620
Anthracite (Pennsylvania).....	1 155	272,345	194,390	77,955	71.4	15	34,583	12.7	37	36,414	13.4	53	201,345	73.9	189,807	41,541
Bituminous coal.....	6,636	8,322,213	5,793,651	2,528,562	60.6	2,333	4,254,621	51.1	3,398	1,829,583	22.0	965	2,238,000	26.9	1,509,080	698,979
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS.....</b>	<b>4,379</b>	<b>4,908,728</b>	<b>3,141,991</b>	<b>1,766,737</b>	<b>64.0</b>	<b>1,538</b>	<b>2,046,645</b>	<b>41.7</b>	<b>2,262</b>	<b>1,311,381</b>	<b>26.7</b>	<b>579</b>	<b>1,550,702</b>	<b>31.6</b>	<b>1,095,346</b>	<b>455,356</b>
Kentucky, eastern.....	460	530,099	292,312	237,776	55.1	83	266,266	48.3	337	200,011	37.7	49	73,822	13.9	36,057	37,765
Maryland.....	58	53,486	34,168	19,818	63.9	20	26,077	46.9	23	9,744	18.2	15	18,665	34.9	9,091	9,574
Ohio.....	788	461,494	348,214	113,280	75.5	305	264,201	57.2	360	66,033	14.3	122	131,260	28.4	84,017	47,247
Pennsylvania.....	1,938	1,494,676	1,112,956	881,720	74.5	868	837,549	56.0	826	226,906	15.2	249	430,319	28.8	275,407	154,913
Tennessee, northeastern.....	92	109,304	19,390	89,914	17.7	11	14,488	13.3	77	81,364	74.4	4	13,453	12.3	4,902	8,550
Virginia.....	108	308,015	312,376	89,639	78.3	28	117,126	29.4	72	74,242	18.6	13	207,647	52.0	196,280	12,367
West Virginia.....	926	1,800,664	1,022,574	838,090	55.0	232	531,948	28.6	567	663,179	35.1	127	675,537	36.3	460,626	184,911
<b>SOUTHERN APPALACHIAN REGION.....</b>	<b>205</b>	<b>849,411</b>	<b>719,269</b>	<b>130,142</b>	<b>84.7</b>	<b>62</b>	<b>598,028</b>	<b>70.4</b>	<b>112</b>	<b>89,962</b>	<b>10.6</b>	<b>31</b>	<b>161,421</b>	<b>19.0</b>	<b>121,241</b>	<b>40,180</b>
Alabama.....	188	654,633	563,894	90,739	86.1	54	464,855	69.5	106	64,724	9.9	28	135,064	20.6	109,039	26,015
Georgia, North Carolina, and Tennessee, southeastern.....	17	194,778	155,375	39,403	79.8	8	143,173	73.5	6	25,238	13.0	3	26,367	13.5	12,202	14,165
<b>MICHIGAN REGION.....</b>	<b>11</b>	<b>9,169</b>	<b>1,921</b>	<b>7,248</b>	<b>21.0</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>	<b>4</b>	<b>1,560</b>	<b>17.0</b>	<b>7</b>	<b>7,609</b>	<b>83.0</b>	<b>1,921</b>	<b>5,688</b>
<b>EASTERN INTERIOR REGION.....</b>	<b>908</b>	<b>1,135,098</b>	<b>861,906</b>	<b>273,192</b>	<b>75.9</b>	<b>389</b>	<b>693,896</b>	<b>60.3</b>	<b>352</b>	<b>161,737</b>	<b>14.2</b>	<b>167</b>	<b>289,445</b>	<b>25.5</b>	<b>178,010</b>	<b>111,435</b>
Illinois.....	447	754,235	596,082	158,153	79.0	192	479,737	63.6	170	85,511	11.7	85	185,967	24.7	116,345	69,642
Indiana.....	295	179,511	106,733	72,745	59.5	110	62,126	34.6	119	41,840	23.0	66	41,840	42.4	44,637	31,408
Kentucky, western.....	166	201,322	159,061	42,261	79.0	87	142,083	70.6	63	31,876	15.8	16	27,413	13.6	17,038	10,386
<b>WESTERN INTERIOR REGION.....</b>	<b>475</b>	<b>203,530</b>	<b>92,530</b>	<b>111,000</b>	<b>45.5</b>	<b>100</b>	<b>63,503</b>	<b>31.2</b>	<b>310</b>	<b>84,777</b>	<b>41.7</b>	<b>65</b>	<b>55,250</b>	<b>27.1</b>	<b>29,027</b>	<b>26,223</b>
Iowa.....	167	67,604	31,632	35,972	48.5	28	14,630	21.6	110	28,990	35.5	29	28,984	42.9	17,033	11,952
Kansas.....	129	74,509	30,629	43,880	41.1	19	25,145	33.7	98	39,364	53.6	13	9,410	12.6	5,484	3,926
Missouri.....	179	61,417	30,239	31,173	49.2	53	28,728	33.6	102	20,553	33.9	24	10,556	27.4	6,511	10,345
<b>SOUTHERN INTERIOR REGION.....</b>	<b>212</b>	<b>179,718</b>	<b>71,388</b>	<b>108,330</b>	<b>39.7</b>	<b>40</b>	<b>61,716</b>	<b>34.3</b>	<b>128</b>	<b>90,781</b>	<b>50.5</b>	<b>34</b>	<b>27,221</b>	<b>15.1</b>	<b>9,672</b>	<b>17,549</b>
Arkansas.....	85	24,496	12,226	12,270	49.9	14	9,251	37.8	59	8,108	33.1	15	7,137	29.1	2,975	4,162
Oklahoma.....	94	106,068	28,729	77,339	28.4	15	21,945	20.9	66	69,033	65.7	13	14,050	13.4	4,784	9,306
Texas.....	33	50,154	32,433	17,721	64.7	11	30,520	60.9	16	13,640	27.2	6	5,994	12.0	1,913	4,081
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS.....</b>	<b>446</b>	<b>1,086,589</b>	<b>904,646</b>	<b>131,943</b>	<b>87.3</b>	<b>204</b>	<b>800,833</b>	<b>77.3</b>	<b>160</b>	<b>89,395</b>	<b>8.6</b>	<b>82</b>	<b>146,361</b>	<b>14.1</b>	<b>103,813</b>	<b>42,548</b>
Colorado.....	161	128,181	89,608	38,573	69.9	55	69,007	46.0	62	20,726	16.2	44	48,448	37.8	30,601	17,847
Montana.....	67	75,287	55,124	20,163	73.2	34	44,337	58.9	24	7,823	10.4	9	23,127	30.7	10,787	12,340
New Mexico.....	21	641,125	614,619	26,506	95.9	16	599,099	91.9	2	26,186	4.1	3	25,840	4.0	25,820	320
North Dakota.....	79	17,734	9,305	8,429	52.5	44	9,065	51.1	33	8,029	45.3	2	640	3.6	240	400
Utah.....	27	47,061	44,532	2,529	94.6	18	35,962	76.4	7	2,319	4.9	2	8,770	18.6	8,570	200
Washington.....	35	66,180	44,368	21,812	67.0	12	25,094	37.9	11	15,013	22.7	12	26,073	39.4	19,274	6,799
Wyoming.....	46	57,562	44,526	13,036	77.4	19	35,705	62.0	17	3,394	14.6	10	13,463	28.4	8,821	4,642
California, Idaho, Oregon, and South Dakota.....	10	3,460	2,564	906	73.9	6	2,564	73.9	4	906	26.1	.....	.....	.....	.....	.....
<b>Nonproducing enterprises.....</b>	<b>26</b>	<b>24,707</b>	<b>14,317</b>	<b>10,390</b>	<b>57.9</b>	<b>10</b>	<b>6,565</b>	<b>26.6</b>	<b>9</b>	<b>6,560</b>	<b>26.7</b>	<b>7</b>	<b>11,553</b>	<b>46.8</b>	<b>7,752</b>	<b>3,800</b>
Pennsylvania.....	10	8,722	6,946	1,776	79.6	4	736	8.4	2	920	10.5	4	7,066	81.0	6,210	856
West Virginia.....	3	3,418	2,088	1,330	61.1	1	1,200	35.1	1	20	0.6	1	2,198	64.3	888	1,310
All other states.....	13	12,567	5,283	7,284	42.0	5	4,629	36.8	6	5,650	45.0	2	2,288	18.2	654	1,634

1 Exclusive of 99 enterprises operating only breakers, culm washeries, and dredges, and controlling no coal lands.

2 Includes enterprises in states as follows: Colorado, 1; Illinois, 1; Iowa, 1; Kansas, 1; Kentucky, 3; Ohio, 1; Oregon, 1; Texas, 1; Virginia, 1; and Washington, 2.

Comparative acreage of coal land according to tenure: 1919 and 1909.—Table 33 shows the total acreage of coal land controlled, as reported at the censuses of 1919 and 1909. It also shows the number of acres of coal land owned by the operators, the number held under lease, and the percentages of increase or decrease under each form of tenure. These statistics are given for producing anthracite and bituminous-coal enterprises, by states.

There was an increase of about one-fourth in the

acreage of coal land controlled in 1919 as compared with 1909, and this was all in bituminous-coal land as there was slight decrease in the anthracite land controlled. For the bituminous coal-mining enterprises in the United States as a whole there was a slightly larger increase in the acreage controlled by ownership than in the acreage held under lease, and for anthracite-mining enterprises there was a small increase in acreage held by ownership as against a considerable decrease in the acreage held under lease.

TABLE 33.—COMPARATIVE STATISTICS, COAL LAND CONTROLLED, PRODUCING ENTERPRISES: 1919 AND 1909.

STATE.	COAL LAND CONTROLLED (ACRES).								
	Total.			Owned.			Held under lease.		
	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>
UNITED STATES.....	8,804,558	6,858,520	28.3	5,968,041	4,732,556	26.5	2,606,517	2,125,964	22.6
Anthracite (Pennsylvania).....	272,345	284,474	-4.3	194,390	183,044	6.2	77,955	101,430	-23.1
Bituminous coal.....	8,532,213	6,574,046	28.6	5,773,651	4,549,512	27.3	2,528,562	2,024,534	24.9
Alabama.....	654,633	599,259	9.2	563,894	626,355	-7.3	90,739	73,904	22.8
Arkansas.....	24,490	54,859	-54.9	12,226	23,836	-48.8	12,270	30,474	-59.7
Colorado.....	128,181	93,502	37.1	89,608	65,201	37.4	38,573	28,301	35.3
Illinois.....	784,235	532,396	33.5	596,082	395,965	30.5	158,133	156,431	1.1
Indiana.....	179,511	140,344	28.0	108,768	103,910	2.7	72,748	36,334	100.2
Iowa.....	67,604	70,192	-3.7	31,662	20,152	57.1	35,942	50,040	-28.2
Kansas.....	74,509	80,459	-7.4	30,629	53,840	-42.6	43,890	27,119	61.8
Kentucky.....	731,411	394,689	100.6	451,374	247,006	52.7	280,037	117,668	138.0
Maryland.....	53,438	68,220	-21.6	34,183	63,596	-46.3	19,318	4,034	317.8
Michigan.....	9,169	28,135	-60.4	1,921	3,696	-48.0	7,248	19,439	-62.7
Missouri.....	61,417	116,108	-47.1	20,239	70,805	-57.3	31,178	45,903	-31.2
Montana.....	75,387	49,825	-10.7	58,124	39,588	-34.2	20,163	10,237	97.0
New Mexico.....	641,125	115,849	453.4	614,619	64,929	846.6	26,506	50,920	-47.9
North Dakota.....	17,784	10,358	71.2	9,305	7,971	16.7	6,429	2,335	253.4
Ohio.....	461,494	408,386	13.6	348,214	260,428	33.7	113,280	148,913	-22.4
Oklahoma.....	105,068	75,744	38.7	26,729	910	.....	78,339	74,834	4.7
Pennsylvania.....	1,494,676	1,678,537	-10.7	1,112,956	1,321,981	-15.8	381,720	351,556	8.6
Tennessee.....	294,384	458,924	-35.9	168,067	353,954	-53.4	129,317	104,970	23.2
Texas.....	50,184	128,774	-60.1	33,433	104,513	-69.0	17,731	21,261	-16.7
Utah.....	47,051	17,341	171.3	44,632	17,221	158.6	2,519	120	.....
Virginia.....	399,015	169,296	135.7	312,376	85,217	266.6	86,639	84,079	3.0
Washington.....	66,180	88,611	-25.3	44,368	67,635	-34.4	21,812	20,976	4.0
West Virginia.....	1,890,664	1,134,485	64.0	1,022,574	583,263	75.3	838,090	551,222	52.0
Wyoming.....	57,562	64,783	-11.1	44,526	50,024	-11.0	13,036	14,759	-11.7
All other states <sup>2</sup> .....	13,167	20,642	-36.2	12,262	18,972	-35.4	905	1,670	-45.8

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes acreage of coal land for anthracite mines in Colorado and New Mexico classified as anthracite enterprises in 1909.

<sup>3</sup> Includes California, Georgia, Idaho, North Carolina, Oregon, and South Dakota for 1919, and California, Georgia, Idaho, and Oregon for 1909.

Comparative production, according to tenure of coal land: 1919 and 1909.—Table 34 gives for 1919 and 1909 for selected states by mining regions, the number of bituminous coal mines reported on land owned, on land held under lease, and on land partly owned and partly held under lease, together with the total output for each class of mines. Of the total production shown in this table for 1919, approximately 47 per cent was that of mines on land wholly owned by the operators, 29 per cent that of mines on land wholly leased, and 24 per cent that of mines on land partly owned and partly held under lease by the operators. The corresponding percentages for 1909 were, respectively, 44,

22, and 34. Although mines of the class operating on lands controlled by both forms of tenure did not report what part of the output came from owned and what part from leased land, it is probable that the greater portion was taken from land held by ownership. This is shown by the amount of royalties and rents reported by these operators which indicates that the coal mined from leased lands was somewhat less than half the total production of these mines in both 1909 and 1919. (See Tables 36 and 38.) Consequently, it may be estimated that between 60 and 65 per cent of the bituminous coal mined in 1909 and 1919 was from land owned by the operators and that between 35 and 40 per cent was from leased holdings.

TABLE 84.—COMPARATIVE PRODUCTION FOR BITUMINOUS COAL-MINING ENTERPRISES, CLASSIFIED ACCORDING TO TENURE OF LAND: 1919 AND 1909.

REGION AND STATE.	ENTERPRISES OPERATING—															
	ALL CLASSES.				Only owned land.				Only land held under lease.				Land partly owned and partly held under lease.			
	Number of mines.		Coal produced (tons, 2,000 pounds).		Number of mines.		Coal produced (tons, 2,000 pounds).		Number of mines.		Coal produced (tons, 2,000 pounds).		Number of mines.		Coal produced (tons, 2,000 pounds).	
	1919	1909	1919	1909	1919	1909	1919	1909	1919	1909	1919	1909	1919	1909	1919	1909
UNITED STATES.....	8,282	6,016	460,425,836	376,952,534	2,986	2,220	215,357,566	165,144,620	3,774	2,412	132,166,723	82,948,327	1,522	1,384	112,901,548	128,850,587
APPALACHIAN REGIONS:																
Alabama.....	260	203	15,411,436	13,676,561	90	109	8,629,789	10,360,417	126	63	3,924,418	1,639,539	44	31	2,857,229	1,676,605
Kentucky.....	742	310	29,426,018	10,561,276	235	144	13,620,439	5,597,607	419	121	11,982,268	3,056,051	88	45	3,823,311	1,907,618
Maryland.....	92	70	2,997,336	4,001,272	30	42	824,681	2,910,850	28	17	355,542	341,265	34	11	1,817,113	749,157
Ohio.....	898	640	35,140,541	27,518,764	354	260	18,203,004	12,473,327	330	225	6,735,216	4,022,418	164	155	10,202,321	11,023,019
Pennsylvania.....	2,584	1,509	150,029,687	137,304,760	1,168	587	93,631,816	64,782,860	960	471	25,606,516	21,400,517	456	451	30,791,855	51,121,383
Tennessee.....	143	142	5,132,167	5,972,930	32	38	1,610,144	2,002,475	94	75	2,821,677	3,043,900	17	29	700,346	926,555
Virginia.....	118	85	9,334,786	4,949,341	26	10	1,545,304	147,896	75	54	6,583,028	2,781,667	17	21	2,206,456	2,039,778
West Virginia.....	1,287	661	77,617,115	51,486,666	322	157	17,144,017	11,008,781	708	352	43,863,849	26,111,412	257	153	16,609,249	14,375,473
MICHIGAN REGION.....	14	28	995,999	1,772,315	.....	3	.....	9,987	4	2	107,600	(*)	10	23	888,399	* 1,782,328
EASTERN INTERIOR REGION:																
Illinois.....	499	631	60,630,650	50,570,503	212	237	32,281,470	25,638,797	178	256	11,268,970	5,940,057	109	138	16,830,210	17,991,679
Indiana.....	317	323	20,504,791	14,728,231	115	147	7,440,283	7,220,508	128	115	6,326,402	2,506,029	74	60	7,738,156	4,995,096
WESTERN INTERIOR REGION:																
Iowa.....	195	311	5,474,249	7,725,679	33	57	1,084,630	1,406,230	119	178	1,917,164	2,365,695	43	76	2,472,455	3,951,754
Kansas.....	166	202	5,204,388	6,896,660	26	56	1,403,236	3,185,115	110	121	2,414,948	1,863,393	30	25	1,386,204	1,841,662
Missouri.....	196	220	3,788,714	3,596,691	59	75	1,421,573	1,179,523	108	113	1,441,564	1,065,890	29	32	920,577	1,351,579
SOUTHERN INTERIOR REGION:																
Arkansas.....	91	69	1,440,493	2,373,619	15	19	201,572	1,173,105	60	35	825,010	560,642	16	15	413,911	644,572
Oklahoma.....	131	104	3,782,794	3,113,149	18	6	390,888	50,394	94	94	2,345,019	2,906,888	19	4	555,857	155,967
Texas.....	42	47	1,588,240	1,824,742	17	28	345,470	1,282,486	18	11	604,993	383,668	7	8	137,877	158,598
NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS:																
Colorado.....	164	157	10,182,512	10,705,253	55	48	2,472,147	1,999,949	62	55	2,398,939	1,670,838	47	54	5,811,426	7,034,496
Montana.....	76	65	3,211,719	2,543,383	36	42	1,328,826	1,287,913	24	12	273,136	282,190	16	11	1,608,757	973,290
New Mexico.....	34	29	3,185,484	2,799,551	24	18	2,690,472	1,632,254	5	4	(*)	57,329	5	7	695,012	1,069,968
North Dakota.....	79	53	767,696	364,586	44	44	545,500	330,305	33	9	(*)	34,231	2	.....	* 222,135	.....
Utah.....	34	22	4,522,847	2,259,789	22	21	3,175,097	2,262,409	7	1	(*)	(*)	5	.....	* 1,417,750	.....
Washington.....	43	54	2,995,910	3,601,213	18	25	893,089	2,470,080	11	10	496,099	138,244	19	19	1,684,722	992,589
Wyoming.....	65	65	7,212,006	6,294,596	32	35	3,675,066	3,470,907	19	15	1,443,118	685,717	14	15	2,196,832	2,134,972
All other states <sup>7</sup> .....	12	17	92,259	308,064	8	12	85,552	253,417	4	3	6,707	(*)	.....	2	.....	* 71,957

<sup>1</sup> Includes figures for anthracite mines in Colorado and New Mexico, classified as anthracite enterprises in 1909.

<sup>2</sup> Includes tonnage for mines not distributed by states, in order to avoid disclosure of individual operations. See notes 3, 4, 5, and 6.

<sup>3</sup> Exclusive of tonnage for mines on land held under lease, which, to avoid disclosure, is distributed by states with the tonnage for mines on land partly owned and partly held under lease. See notes 2, 4, 5, and 6.

<sup>4</sup> Tonnage not shown is combined, in order to avoid disclosure, with tonnage for mines on land partly owned and partly held under lease. See notes 2, 3, and 5.

<sup>5</sup> Includes tonnage for mines on land held under lease. See notes 2, 3, and 4.

<sup>6</sup> Tonnage not shown is combined, in order to avoid disclosure, with tonnage of mines in "All other states" operated on land partly owned and partly held under lease. See note 3.

<sup>7</sup> Includes California, Georgia, Idaho, North Carolina, Oregon, and South Dakota.

<sup>8</sup> Includes tonnage of mine on land held under lease in Utah. See note 6.

The table indicates by the average output per mine in each class that the mines operated on land held by ownership were generally larger than those operated on land held under lease. In the United States as a whole, the average output per mine in these two classes was respectively about 70,000 tons and 35,000 tons in both 1919 and 1909. The average output for each form of tenure in the leading state of each of the principal regions is shown in the following statement:

		AVERAGE OUTPUT BY MINES—	
		On land owned (tons, 2,000 lbs.).	On land held under lease (tons, 2,000 lbs.).
Pennsylvania.....	1919..	80,000	27,000
	1909..	110,000	45,000
West Virginia.....	1919..	53,000	62,000
	1909..	70,000	74,000
Illinois.....	1919..	152,000	63,000
	1909..	113,000	23,000
Colorado.....	1919..	45,000	39,000
	1909..	42,000	30,000

Royalties.—Table 35 presents for producing anthracite enterprises and Table 36 presents by regions and states for producing bituminous-coal enterprises classified according to form of tenure of coal land, the number of mines, royalties and rents paid, the total value of all products, and the quantity of coal produced. Although the census of 1919 did not distinguish between royalties and rents paid for mineral lands and rents of other kinds, the statistics presented relating to royalties and rents are for the most part royalties only, as rents of other kinds are in the aggregate insignificant in the coal-mining industry. This is indicated by the fact that the amounts reported for enterprises of the class operating only on land held by ownership is a relatively small part of the total royalties and rents paid by all enterprises. Royalties are a compensation for coal mined from leased land and are generally a fixed charge per ton of coal marketed.

TABLE 35.—QUANTITY AND VALUE OF ANTHRACITE PRODUCED AND ROYALTIES AND RENTS, FOR PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO TENURE OF COAL LAND: 1919.

CLASS OF ENTERPRISE.	Number of enterprises.	Number of mines.	Value of all products.	Anthracite produced (tons, 2,240 pounds).	Royalties and rents.
All classes.....	1 156	374	\$361,005,810	77,418,269	\$11,406,158
Enterprises operating:					
Only owned land.....	16	24	83,066,790	7,525,526	131,987
Only land held under lease.....	87	100	58,988,631	12,993,872	5,875,618
Land partly owned and partly held under lease..	53	250	268,930,389	56,898,871	5,397,553

<sup>1</sup> Exclusive of 19 enterprises operating culm washeries only and 79 enterprises operating river dredges.

Table 35 shows that more than half of the anthracite-mining enterprises operated only leased acreage and reported about one-sixth of the total quantity and value of products of anthracite mines but that they paid more than one-half of all royalties and rents, which amounted to an average rate of 45 cents per ton of coal produced. Enterprises which operated on land held by ownership entirely, representing only one-tenth of the total number of anthracite enterprises, reported somewhat more than one-twelfth of the total quantity and value of anthracite mined and paid less than 2 per cent of the total amount of royal-

ties and rents and at a rate of less than 2 cents per ton of coal produced. The one-third of the anthracite enterprises which operated on land partly owned and partly held under lease produced approximately three-fourths of the total quantity and value of coal and reported less than half the total royalties and rents paid by anthracite mines, which amounted to 9 cents per ton of coal produced.

Table 36 shows that about one-half of the bituminous coal-mining enterprises in the United States as a whole were in the class operating only leased acreage and they reported less than one-third of the total quantity and value of the bituminous-coal output, but paid more than two-thirds of the total royalties and rents reported by bituminous-coal enterprises. This amounted to 12 cents per ton for enterprises in this class. Enterprises in the class operating only on land held by ownership, constituting a little more than one-third of the total number, reported nearly one-half of the total quantity and value of the bituminous-coal output and paid in royalties and rents (probably chiefly rents for buildings and equipment) less than 4 per cent of the total amount reported as royalties and rents.

TABLE 36.—QUANTITY AND VALUE OF BITUMINOUS COAL PRODUCED AND ROYALTIES AND RENTS FOR PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO TENURE OF COAL LAND: 1919.

REGION AND STATE.	ALL CLASSES.					ENTERPRISES OPERATING—				
	Number of enterprises.	Number of mines.	Value of all products.	Coal produced (tons, 2,000 pounds).	Royalties and rents.	Only owned land.				
						Number of enterprises.	Number of mines.	Value of all products.	Coal produced (tons, 2,000 pounds).	Royalties and rents.
UNITED STATES.....	6,636	8,282	\$1,145,977,565	460,428,636	\$22,266,056	2,333	2,986	\$515,769,546	215,357,555	\$330,030
NORTHERN AND MIDDLE APPALACHIAN REGIONS.....	4,379	5,648	721,847,202	300,397,540	16,041,319	1,538	2,044	327,555,968	140,282,291	535,126
Kentucky, eastern.....	499	582	54,803,463	21,180,866	1,566,304	58	137	20,208,468	8,079,858	25,477
Maryland.....	58	92	8,195,667	2,997,836	109,637	30	30	2,202,622	824,681	4,079
Ohio.....	788	898	77,988,602	35,140,841	1,420,770	306	354	40,114,846	18,203,004	24,596
Pennsylvania.....	1,988	2,584	362,978,982	150,029,687	6,003,627	863	1,168	217,966,327	93,631,816	385,141
Tennessee, northeastern.....	92	117	11,313,735	4,127,179	336,365	11	17	2,344,653	964,156	1,453
Virginia.....	108	118	23,763,440	9,334,786	679,464	23	26	3,831,947	1,545,304	20,767
West Virginia.....	926	1,287	198,106,343	77,617,116	5,926,361	323	323	40,886,766	17,144,017	63,608
SOUTHERN APPALACHIAN REGION.....	205	288	48,206,042	16,476,750	733,106	62	107	24,012,362	9,836,108	31,948
Alabama.....	188	260	45,356,441	15,411,436	684,997	54	90	24,106,276	8,639,729	26,731
Georgia, North Carolina, and Tennessee, southeastern.....	17	28	2,850,601	1,065,314	48,109	8	17	1,904,087	706,314	4,267
MICHIGAN REGION.....	11	14	3,861,874	995,999	49,940					
EASTERN INTERIOR REGION.....	908	1,006	202,189,988	89,110,563	2,426,348	389	435	102,740,568	45,231,839	81,159
Illinois.....	447	499	138,767,833	60,880,650	1,704,594	192	212	74,136,273	32,231,470	55,109
Indiana.....	295	317	45,492,726	20,504,791	582,268	110	115	16,882,985	7,440,283	24,496
Kentucky, western.....	166	190	17,929,377	8,275,122	158,489	87	106	11,862,350	5,549,686	1,562
WESTERN INTERIOR REGION.....	475	557	44,729,788	14,462,351	977,791	100	118	12,033,642	3,909,489	15,538
Iowa.....	167	195	16,908,358	5,474,249	299,194	28	33	3,099,863	1,084,630	1,021
Kansas.....	129	166	15,748,848	5,204,388	409,274	26	26	4,287,839	1,403,236	8,309
Missouri.....	179	196	12,077,585	3,783,714	268,823	53	59	4,646,175	1,421,673	6,143
SOUTHERN INTERIOR REGION.....	212	264	24,091,691	6,811,527	618,565	40	50	7,194,766	1,927,930	19,099
Arkansas.....	85	91	5,292,274	1,440,498	184,207	14	15	728,935	201,672	339
Oklahoma.....	94	121	14,477,317	3,782,704	349,833	15	18	3,300,882	880,888	13,397
Texas.....	33	42	4,322,100	1,588,240	84,505	11	17	3,076,949	845,470	363
NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS.....	446	505	90,962,080	32,171,106	1,448,967	204	232	40,282,345	14,579,473	150,055
Colorado.....	101	164	28,342,195	10,182,512	732,430	55	55	6,600,452	2,472,147	26,369
Montana.....	67	76	8,591,211	3,211,719	139,369	34	36	3,667,862	1,329,826	23,211
New Mexico.....	21	34	9,905,541	3,185,484	97,167	16	24	7,480,595	2,590,472	48,641
North Dakota.....	79	79	1,927,304	767,695	30,868	44	44	1,379,953	545,560	1,625
Utah.....	27	34	12,682,085	4,592,847	39,273	18	22	8,578,870	3,175,097	6,004
Washington.....	35	43	10,737,656	2,966,910	166,270	12	13	3,310,967	968,089	40,963
Wyoming.....	46	65	18,723,451	7,212,006	236,261	19	32	9,165,089	3,575,056	1,267
California, Idaho, Oregon, and South Dakota.....	10	10	102,687	31,983	4,340	6	6	70,542	25,226	1,286

TABLE 36.—QUANTITY AND VALUE OF BITUMINOUS COAL PRODUCED AND ROYALTIES AND RENTS FOR PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO TENURE OF COAL LAND: 1919—Continued.

REGION AND STATE.	ENTERPRISES OPERATING—continued.									
	Only land held under lease.					Land partly owned and partly held under lease.				
	Number of enterprises.	Number of mines.	Value of all products.	Coal produced (tons, 2,000 pounds).	Royalties and rents.	Number of enterprises.	Number of mines.	Value of all products.	Coal produced (tons, 2,000 pounds).	Royalties and rents.
UNITED STATES.....	3,838	3,774	\$341,935,645	132,166,723	\$15,895,631	965	1,522	\$288,272,874	112,901,548	\$5,599,406
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS.....</b>	<b>2,262</b>	<b>2,594</b>	<b>248,033,003</b>	<b>95,154,588</b>	<b>11,479,025</b>	<b>579</b>	<b>1,010</b>	<b>161,258,331</b>	<b>64,859,671</b>	<b>4,029,158</b>
Kentucky, eastern.....	337	355	27,277,095	10,374,623	1,324,845	49	70	7,016,900	2,806,470	217,982
Maryland.....	23	28	982,407	355,542	47,218	15	34	5,010,338	1,817,113	58,330
Ohio.....	360	380	15,778,002	6,735,216	928,857	123	164	22,095,754	10,202,321	457,327
Pennsylvania.....	326	960	65,773,900	25,606,516	3,523,939	249	456	79,233,725	30,791,855	2,033,447
Tennessee, northeastern.....	77	88	7,670,246	2,735,816	304,132	4	12	1,298,586	427,307	30,651
Virginia.....	72	75	14,469,009	5,583,026	601,194	13	17	5,462,484	2,206,456	57,508
West Virginia.....	567	708	111,062,344	43,863,849	4,748,840	127	257	41,140,294	16,009,249	1,113,918
<b>SOUTHERN APPALACHIAN REGION.....</b>	<b>112</b>	<b>132</b>	<b>12,308,772</b>	<b>4,010,379</b>	<b>560,639</b>	<b>31</b>	<b>49</b>	<b>9,973,906</b>	<b>3,130,368</b>	<b>132,419</b>
Alabama.....	105	125	12,068,216	3,924,418	544,564	28	44	9,192,950	2,857,229	113,652
Georgia, North Carolina, and Tennessee, southeastern.....	6	6	250,556	85,861	25,075	3	5	780,956	273,139	18,767
<b>MICHIGAN REGION.....</b>	<b>4</b>	<b>4</b>	<b>451,068</b>	<b>107,600</b>	<b>8,238</b>	<b>7</b>	<b>10</b>	<b>3,410,816</b>	<b>888,390</b>	<b>41,702</b>
<b>EASTERN INTERIOR REGION.....</b>	<b>352</b>	<b>370</b>	<b>40,985,072</b>	<b>18,303,017</b>	<b>1,880,576</b>	<b>167</b>	<b>201</b>	<b>58,464,303</b>	<b>25,598,207</b>	<b>454,513</b>
Illinois.....	170	178	26,491,998	11,268,970	1,357,562	85	109	39,080,559	16,830,210	291,923
Indiana.....	119	128	11,744,601	5,326,402	410,803	66	74	17,065,190	7,738,156	126,964
Kentucky, western.....	63	64	3,748,473	1,707,645	121,211	16	18	2,318,554	1,017,841	35,736
<b>WESTERN INTERIOR REGION.....</b>	<b>310</b>	<b>337</b>	<b>18,112,657</b>	<b>5,773,676</b>	<b>729,833</b>	<b>65</b>	<b>102</b>	<b>14,583,439</b>	<b>4,779,236</b>	<b>232,425</b>
Iowa.....	110	119	6,266,937	1,917,164	166,617	29	43	7,536,853	2,472,455	131,566
Kansas.....	98	110	7,268,784	2,414,948	350,932	12	30	4,191,852	1,388,204	50,373
Missouri.....	102	108	4,576,936	1,441,564	212,284	24	29	2,854,734	920,577	50,496
<b>SOUTHERN INTERIOR REGION.....</b>	<b>138</b>	<b>172</b>	<b>12,965,673</b>	<b>3,775,922</b>	<b>495,912</b>	<b>34</b>	<b>43</b>	<b>3,931,252</b>	<b>1,107,675</b>	<b>103,554</b>
Arkansas.....	56	60	3,112,351	825,010	150,208	15	16	1,452,988	418,911	33,660
Oklahoma.....	66	94	8,331,136	2,346,019	278,434	13	19	2,156,290	558,857	53,022
Texas.....	16	18	922,186	604,893	67,270	6	7	322,965	137,877	16,872
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS.....</b>	<b>160</b>	<b>165</b>	<b>14,079,410</b>	<b>5,041,641</b>	<b>1,723,898</b>	<b>82</b>	<b>108</b>	<b>36,650,325</b>	<b>12,549,992</b>	<b>575,534</b>
Colorado.....	62	62	6,345,761	2,398,939	355,393	44	47	15,395,982	5,311,426	350,668
Montana.....	24	24	742,965	278,136	40,911	9	16	4,130,394	1,603,757	75,247
New Mexico.....	2	5	(0)	(0)	(0)	3	5	2,444,946	459,012	45,526
North Dakota.....	33	33	(0)	(0)	(0)	2	2	447,346	222,135	29,243
Utah.....	7	7	(0)	(0)	(0)	2	5	4,655,166	1,417,760	23,669
Washington.....	11	11	1,331,871	436,099	74,366	12	19	5,894,518	1,684,722	50,800
Wyoming.....	17	19	3,303,903	1,443,118	145,661	10	14	5,654,549	2,198,532	92,333
California, Idaho, Oregon, and South Dakota.....	4	4	32,145	6,707	3,065					

<sup>1</sup> Includes amounts for 42 enterprises not shown separately by states, in order to avoid disclosure of individual operations.

<sup>2</sup> Exclusive of amounts for 43 enterprises operating only land held under lease which amounts are included, in order to avoid disclosure, with the figures for the separate states.

<sup>3</sup> Combined, to avoid disclosure, with statistics for enterprises operating land partly owned and partly held under lease.

<sup>4</sup> Includes, to avoid disclosure, statistics for enterprises operating only land held under lease.

A little more than one-seventh of the total number of bituminous-coal enterprises operated on land partly held by ownership and partly held under lease, reported about one-fourth of the quantity and value of the coal output, and paid about one-fourth of the total royalties and rents, which amounted to approximately 5 cents per ton of coal produced by enterprises in this class.

Table 37 shows for those anthracite enterprises which operated only leased properties the amount of royalties paid per ton of output, and Table 38 shows similar data by regions and states for the bituminous-coal enterprises which operated only on land held under lease. For bituminous coal the average rates ranged from 10 to 14 cents per ton in the principal

regions and from 10 to 15 cents per ton in states having important production.

TABLE 37.—ANTHRACITE PRODUCED AND ROYALTIES FOR ENTERPRISES OPERATING LEASED PROPERTIES: 1919.<sup>1</sup>

CLASS OF ENTERPRISE.	Coal produced (tons, 2,240 pounds).	ROYALTIES AND RENTS.	
		Amount.	Average per ton.
All classes.....	14,187,462	\$6,235,326	\$0.44
Enterprises operating:			
Mines only.....	606,150	192,250	0.32
Breakers, mines, and washeries.....	12,387,722	5,683,368	0.46
Culm washeries only.....	609,111	341,549	0.56
Dredges only.....	584,479	18,159	0.03

<sup>1</sup> Statistics relate to enterprises which operated leased properties only and not to enterprises which operated both owned and leased properties.

TABLE 38.—BITUMINOUS COAL PRODUCED AND ROYALTIES FOR MINES OPERATING ON LEASED LAND: 1919.<sup>1</sup>

REGION AND STATE.	Coal produced (tons, 2,000 pounds).	ROYALTIES AND RENTS.	
		Amount.	Average per ton.
UNITED STATES.....	132,166,723	\$15,895,621	0.12
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS</b>			
Kentucky, eastern.....	95,154,588	11,479,025	0.12
Maryland.....	10,274,623	1,324,845	0.13
Ohio.....	365,542	47,218	0.13
Pennsylvania.....	6,735,216	928,857	0.14
Tennessee, northeastern.....	25,006,516	3,523,939	0.14
Virginia.....	2,735,816	304,132	0.11
West Virginia.....	5,553,026	601,194	0.11
.....	43,863,849	4,748,840	0.11
<b>SOUTHERN APPALACHIAN REGION</b> .....	4,010,279	569,639	0.14
Alabama.....	3,924,418	544,564	0.14
Georgia, North Carolina, and Tennessee, southeastern.....	85,861	25,075	0.29
<b>MICHIGAN REGION</b> .....	107,600	8,238	0.08
<b>EASTERN INTERIOR REGION</b> .....	18,303,017	1,899,576	0.10
Illinois.....	11,268,970	1,357,552	0.12
Indiana.....	5,326,402	410,803	0.08
Kentucky, western.....	1,707,645	121,211	0.07
<b>WESTERN INTERIOR REGION</b> .....	5,773,676	729,833	0.13
Iowa.....	1,917,164	166,617	0.09
Kansas.....	2,414,948	350,932	0.15
Missouri.....	1,441,564	212,284	0.15
<b>SOUTHERN INTERIOR REGION</b> .....	3,775,923	495,912	0.13
Arkansas.....	825,010	150,208	0.18
Oklahoma.....	2,346,019	278,434	0.12
Texas.....	604,893	67,270	0.11
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS</b>			
Colorado.....	5,041,641	723,368	0.14
Montana.....	2,368,939	355,393	0.15
Washington.....	278,136	40,911	0.15
Wyoming.....	436,099	74,366	0.17
All other states <sup>2</sup> .....	1,443,118	145,661	0.10
.....	485,349	107,067	0.22

<sup>1</sup> Statistics relate to enterprises which operated leased lands only; not to enterprises which operated both owned and leased lands.  
<sup>2</sup> Includes California, Idaho, New Mexico, North Dakota, Oregon, South Dakota, and Utah.

POWER.

Power equipment used: 1919.—The number and horsepower of the several types of prime movers and of electric motors used by all coal-mining enterprises in 1919 are given by regions and states in the table of detailed statistics at the end of this report. In Table 39 these statistics are summarized for producing enterprises in the United States as a whole and given separately for anthracite and bituminous coal-mining enterprises, classified according to mining method. Of the aggregate horsepower used by producing coal mines of all kinds 70.9 per cent was furnished by prime movers operated by the reporting enterprise and 29.1 per cent by equipment operated by purchased power. Electric motors were much less used in anthracite mining than in bituminous coal mining, although the anthracite culm washeries, which reported only a small figure for aggregate horsepower, used chiefly electric motors run by purchased current. Steam engines (not turbines) were the principal sources of power for the industry as a whole as well as for both of its branches. Steam turbines furnished a much smaller part of the power used, but the table shows that although they were relatively unimportant in number those reported were for the most part very large and they supplied 8.1 per cent of the aggregate horsepower used. Internal-combustion engines were reported in considerable numbers but were small and furnished only a negligible part of the total horsepower used except on anthracite dredges.

TABLE 39.—POWER EQUIPMENT, PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO MINING METHOD: 1919.

CLASS OF ENTERPRISE.	POWER USED.									
	Aggregate horsepower.	Prime movers.								
		Total horsepower.	Steam engines (not turbines).		Steam turbines.		Internal-combustion engines.		Water wheels and turbines.	
			Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.
All producing coal enterprises.....	3,055,195	2,166,024	14,475	1,897,003	358	246,444	1,319	22,503	9	74
Anthracite (Pennsylvania).....	899,783	782,090	5,298	780,141	45	50,665	73	1,284	.....	.....
Enterprises operating—										
Mines only.....	14,886	10,923	122	10,923	.....	.....	.....	.....	.....	.....
Breakers, mines, and washeries.....	875,088	766,524	5,014	715,204	45	50,665	19	655	.....	.....
Culm washeries only.....	6,067	1,705	25	1,705	.....	.....	.....	.....	.....	.....
Dredges only.....	3,742	2,938	137	2,309	.....	.....	54	629	.....	.....
Bituminous coal.....	2,155,412	1,383,934	9,177	1,166,862	313	195,779	1,246	21,219	9	74
Enterprises—										
Without mining machines.....	380,491	286,881	3,132	263,531	38	12,308	975	10,968	9	74
Using mining machines.....	1,774,921	1,097,053	6,045	903,331	275	183,471	271	10,251	.....	.....

CLASS OF ENTERPRISE.	POWER USED—COAL.					PER CENT OF AGGREGATE HORSEPOWER.				
	Equipment operated by purchased power.			ELECTRIC MOTORS RUN BY CURRENT GENERATED BY THE ENTERPRISE REPORTING.		Total prime movers.	Steam engines (not turbines).	Steam turbines.	Internal-combustion engines.	Electric motors operated by purchased current.
	Electric motors.		Other.	Number.	Horsepower.					
	Number.	Horsepower.								
All producing coal enterprises.....	23,067	883,824	347	24,845	893,064	70.9	62.1	8.1	0.7	29.1
Anthracite (Pennsylvania).....	1,881	117,693	.....	3,801	185,723	86.9	81.1	5.6	0.1	13.1
Enterprises operating—										
Mines only.....	86	3,963	.....	2	100	73.4	73.3	.....	.....	28.6
Breakers, mines, and washeries.....	1,655	106,564	.....	3,799	185,623	87.6	81.7	5.8	0.1	12.4
Culm washeries only.....	98	4,362	.....	.....	.....	28.1	23.1	.....	.....	71.9
Dredges only.....	42	804	.....	.....	.....	78.5	61.7	.....	.....	21.5
Bituminous coal.....	21,186	771,131	347	21,044	707,341	64.2	54.1	9.1	1.0	35.8
Enterprises—										
Without mining machines.....	2,637	83,605	5	2,196	59,871	75.4	69.3	3.2	2.9	24.6
Using mining machines.....	18,549	677,526	342	18,848	647,470	61.8	50.9	10.3	0.6	33.2

**Extent of electrification.**—The relative use of electrically driven equipment as compared with mechanical drive or the direct use of prime movers, in other words, the extent of electrification in the coal-mining industry, may be estimated from the ratio of the total horsepower of all electric motors used to the horsepower of prime movers used. As, however, some considerable part of the reported horsepower of prime movers was used for driving electric generators which furnished current for operating motors, the total horsepower of prime movers should be reduced by the amount required to drive generators in making such estimates. The extent of electrification may be roughly approximated from the data presented in Tables 12, 39, and 42 by comparing the total horsepower of all electric motors with the horsepower of prime movers, not including that used to drive generators of electric current. Thus measured, the horsepower of electric motors for all productive coal mines in the United States in 1919 was roughly 40 per cent greater than the horsepower of prime movers used for direct drive of mechanical equipment; whereas in 1909 the horsepower of electric motors was only about one-fourth of the horsepower of prime movers used for mechanical drive. The corresponding ratio for bituminous coal-mining enterprises in 1919 was as 2 to 1 and for anthracite enterprises was as one-half to 1, whereas in 1909 the ratios were as 0.4 and 0.075 to 1, respectively. The estimated ratios for producing anthracite enterprises in 1919, classified according to mining method, and for producing bituminous-coal enterprises in 1919, separately by regions, and accord-

ing to the use of mining machines are given in the following statement:

	Electric motors.	Prime movers.
ANTHRACITE (Pennsylvania).....	0.5	1
Enterprises operating—		
Mines only.....	0.4	1
Breakers, mines, and washeries.....	0.5	1
Culm washeries only.....	2.6	1
River dredges only.....	0.8	1
BITUMINOUS COAL.....	2.2	1
Enterprises without mining machines.....	0.7	1
Enterprises using mining machines.....	2.9	1
Northern and Middle Appalachian Regions.....	3.4	1
Enterprises without mining machines.....	9.2	1
Enterprises using mining machines.....	4.0	1
Southern Appalachian Region.....	1.8	1
Enterprises without mining machines.....	0.9	1
Enterprises using mining machines.....	3.1	1
Michigan Region.....	6.6	1
Enterprises without mining machines.....	7.1	1
Enterprises using mining machines.....		
Eastern Interior Region.....	1.3	1
Enterprises without mining machines.....	0.4	1
Enterprises using mining machines.....	1.9	1
Western Interior Region.....	0.5	1
Enterprises without mining machines.....	0.4	1
Enterprises using mining machines.....	0.7	1
Southern Interior Region.....	0.5	1
Enterprises without mining machines.....	0.3	1
Enterprises using mining machines.....	1.0	1
Northern Great Plains, Rocky Mountain, and Pacific Coast Regions.....	1.5	1
Enterprises without mining machines.....	1.3	1
Enterprises using mining machines.....	1.5	1

**Horsepower used per mine, per wage earner, and per 1,000 tons of coal produced.**—Table 40 shows for producing anthracite-mining enterprises, classified according to type of operation, the aggregate horsepower used per enterprise and per plant, per wage earner, and per thousand tons of coal produced

TABLE 40.—HORSEPOWER USED PER ENTERPRISE, PER MINE, ETC., PER WAGE EARNER, AND PER 1,000 TONS OF COAL PRODUCED, FOR ANTHRACITE ENTERPRISES, CLASSIFIED ACCORDING TO CHARACTER OF OPERATION: 1919.

CLASS OF ENTERPRISE.	Number of enterprises.	Number of mines, etc.	Wage earners (average number).	Coal produced (tons, 2,240 pounds).	POWER USED (AGGREGATE HORSEPOWER).				
					Total.	Per enterprise.	Per mine, etc.	Per wage earner.	Per 1,000 tons of coal produced.
All classes.....	254		147,372	78,723,668	890,783	3,542		6.1	11.4
Enterprises operating:									
Mines only.....	16	16	2,783	1,709,181	14,886	930	930	5.3	8.7
Breakers, mines, and washeries.....	140	1,245 358	143,799	75,709,068	875,083	6,251	3,572 2,444	6.1	11.6
Culm washeries only.....	19	19	434	684,034	6,067	319	319	14.0	8.9
Dredges only.....	79	81	356	621,365	3,742	47	46	10.5	6.0

<sup>1</sup> Mines.

<sup>2</sup> Breakers.

The power used per unit of operation (per enterprise or mine, breaker, washery, or dredge) is greatest for mines and breakers and least for dredges, but the mines and breakers used less horsepower per wage earner employed and produced fewer tons of coal per horsepower used. Separate data for horsepower used by mines, and by breakers and washeries connected with them, are not available for enterprises operating breakers and mines. Therefore, the average horsepower per mine as given in Table 40 includes the proportionate amount for breakers and washeries connected with mines, and the average per breaker

includes the proportionate amount for mines and washeries operated in connection with the breaker.

Table 41 shows for producing bituminous-coal enterprises by mining regions and selected states, for enterprises classified according to the use of mining machines, the horsepower per mine, per wage earner employed, and per thousand tons of coal mined. The table shows by comparison with Table 40 that the power used per mine and per wage earner was less for bituminous coal mines than for anthracite mines; but the power used per ton of coal mined was also less than for anthracite, which means that the output per horsepower used was

greater for bituminous coal than for anthracite. The table also shows that the average horsepower per mine and per wage earner was considerably larger for enter-

prises using mining machines, and was also greater per thousand tons of coal mined.

TABLE 41.—POWER USED BY BITUMINOUS COAL ENTERPRISES, PER MINE, PER WAGE EARNER, AND PER 1,000 TONS OF COAL PRODUCED, FOR SELECTED STATES: 1919.

REGION AND STATE.	ALL CLASSES.							ENTERPRISES WITHOUT MINING MACHINES.		
	Number of mines.	Wage earners (average number).	Coal produced (tons, 2,000 pounds). Expressed in thousands.	Power used (aggregate horsepower).				Number of mines.	Wage earners (average number).	Coal produced (tons, 2,000 pounds). Expressed in thousands.
				Total.	Per mine.	Per wage earner.	Per 1,000 tons of coal mined.			
UNITED STATES.....	8,282	545,798	460,426	2,155,412	260.3	3.9	4.7	4,412	133,228	92,861
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS.....</b>	5,648	334,615	300,396	1,315,455	232.9	3.9	4.4	2,715	52,627	40,558
Kentucky, eastern.....	552	28,789	21,151	91,487	165.7	3.2	4.3	287	4,896	3,941
Maryland.....	92	4,826	2,997	12,470	135.5	2.6	4.2	62	2,340	1,476
Ohio.....	896	40,452	35,141	136,145	151.6	3.4	3.9	403	3,429	2,364
Pennsylvania.....	2,684	154,992	150,030	658,963	255.0	4.3	4.4	1,428	27,987	23,542
Tennessee, northeastern.....	117	7,246	4,127	19,281	164.8	2.7	4.7	64	1,870	899
Virginia.....	118	11,215	9,335	41,630	352.8	3.7	4.5	71	1,703	1,078
West Virginia.....	1,287	87,095	77,617	355,479	276.2	4.1	4.6	400	10,412	8,258
<b>SOUTHERN APPALACHIAN REGION.....</b>	288	27,174	16,476	101,326	351.8	3.7	6.1	196	13,668	7,849
Alabama.....	260	24,648	15,411	97,089	373.2	3.9	6.3	172	11,321	6,891
<b>EASTERN INTERIOR REGION.....</b>	1,006	109,239	89,111	382,044	379.8	3.5	4.3	580	29,902	21,744
Illinois.....	499	73,780	60,331	247,142	495.3	3.3	4.1	291	21,050	15,265
Indiana.....	317	24,479	20,505	90,585	314.1	4.1	4.9	176	7,100	5,297
Kentucky, western.....	190	10,980	8,275	35,317	185.9	3.2	4.3	113	1,752	1,182
<b>WESTERN INTERIOR REGION.....</b>	557	25,953	14,462	77,942	139.9	3.0	5.4	419	17,641	9,614
Iowa.....	195	10,584	5,474	25,123	134.0	2.5	4.8	160	6,630	3,341
Kansas.....	166	8,064	5,204	23,434	141.2	2.9	4.5	126	7,009	4,411
Missouri.....	196	7,285	3,784	28,385	144.8	3.9	7.5	132	4,002	1,862
<b>SOUTHERN INTERIOR REGION.....</b>	264	12,538	6,811	57,647	218.4	4.6	8.5	204	8,530	4,437
Oklahoma.....	131	7,040	3,738	36,493	278.5	5.2	9.6	78	3,378	1,552
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS.....</b>	495	34,538	32,140	213,487	431.3	6.2	6.6	296	10,763	8,617
Colorado.....	164	11,262	10,133	63,016	384.2	5.6	6.2	78	3,733	3,042
Montana.....	76	3,797	3,212	27,077	356.3	7.1	8.4	46	679	503
New Mexico.....	34	3,564	3,135	13,063	531.3	5.1	5.7	15	276	164
North Dakota.....	79	774	768	2,037	26.8	2.6	2.7	71	384	420
Utah.....	84	3,647	4,593	24,029	708.7	6.6	5.2	15	234	202
Washington.....	43	4,413	2,987	32,190	748.6	7.3	10.8	37	3,811	2,659
Wyoming.....	65	7,091	7,212	47,075	724.2	6.6	6.5	24	1,636	1,637

REGION AND STATE.	ENTERPRISES WITHOUT MINING MACHINES—continued.				ENTERPRISES USING MINING MACHINES.							
	Power used (aggregate horsepower).				Number of mines.	Wage earners (average number).	Coal produced (tons, 2,000 pounds). Expressed in thousands.	Power used (aggregate horsepower).				
	Total.	Per mine.	Per wage earner.	Per 1,000 tons of coal mined.				Total.	Per mine.	Per wage earner.	Per 1,000 tons of coal mined.	
UNITED STATES.....	390,491	86.2	2.9	4.1	3,570	412,570	367,566	1,774,921	458.6	4.3	4.8	
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS.....</b>	108,442	39.9	2.1	2.7	2,933	281,968	259,840	1,207,013	411.5	4.3	4.6	
Kentucky, eastern.....	3,206	11.2	0.7	1.1	265	23,903	18,210	85,379	333.1	3.7	4.8	
Maryland.....	3,235	52.0	1.4	2.2	30	2,496	1,521	9,245	308.2	2.7	6.1	
Ohio.....	6,663	16.5	1.9	2.8	496	37,023	32,777	129,483	261.6	3.5	4.0	
Pennsylvania.....	67,783	47.5	2.4	2.9	1,156	137,006	126,488	591,180	511.4	4.7	4.7	
Tennessee, northeastern.....	4,424	69.1	2.4	4.9	53	5,376	3,228	14,857	280.8	2.5	4.6	
Virginia.....	2,656	37.4	1.6	2.5	47	9,512	8,267	38,974	329.2	4.1	4.7	
West Virginia.....	20,484	51.2	2.0	2.5	887	76,683	69,359	334,995	377.7	4.4	4.8	
<b>SOUTHERN APPALACHIAN REGION.....</b>	39,860	201.3	2.9	5.1	90	13,486	8,627	61,466	633.0	4.6	7.1	
Alabama.....	35,941	209.0	3.2	5.2	83	13,337	8,630	61,098	694.3	4.6	7.2	
<b>EASTERN INTERIOR REGION.....</b>	82,396	142.1	2.8	3.8	426	79,337	67,367	299,646	708.4	3.8	4.4	
Illinois.....	57,630	198.0	2.7	3.8	205	52,730	45,066	189,512	911.1	3.6	4.2	
Indiana.....	20,829	113.3	2.9	3.9	141	17,379	15,208	78,758	558.6	4.5	5.2	
Kentucky, western.....	3,989	34.9	2.2	3.3	77	9,223	7,093	31,373	407.5	3.4	4.4	
<b>WESTERN INTERIOR REGION.....</b>	43,050	102.7	2.4	4.5	138	8,312	4,848	84,992	252.8	4.2	7.2	
Iowa.....	17,366	106.5	2.6	5.2	35	3,954	2,133	9,767	260.2	2.2	4.1	
Kansas.....	15,861	125.9	2.3	3.6	40	1,075	798	7,573	189.3	7.0	9.5	
Missouri.....	9,823	73.9	2.5	5.3	63	3,283	1,922	18,562	294.6	5.7	9.7	
<b>SOUTHERN INTERIOR REGION.....</b>	36,073	176.8	4.2	8.1	60	4,008	2,374	21,674	359.6	5.4	9.1	
Oklahoma.....	16,935	217.1	5.2	10.9	53	3,762	2,231	19,548	368.8	8.2	8.8	
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS.....</b>	70,051	244.9	6.5	8.1	209	23,785	23,623	143,436	698.3	6.0	6.1	
Colorado.....	20,770	266.3	5.6	6.8	86	7,519	7,141	42,346	491.2	5.6	5.9	
Montana.....	5,841	127.0	8.6	11.6	30	3,113	2,709	21,236	707.9	6.8	7.8	
New Mexico.....	685	45.7	2.5	4.2	19	3,288	3,021	17,373	914.6	5.3	5.8	
North Dakota.....	624	8.8	1.6	1.5	8	390	348	1,413	176.6	3.6	4.1	
Utah.....	900	60.0	3.8	4.5	19	3,413	4,391	23,129	1,217.3	6.8	5.3	
Washington.....	29,435	795.3	7.7	11.1	6	602	328	2,765	460.8	4.6	8.4	
Wyoming.....	11,306	491.9	7.2	7.3	41	5,455	5,585	35,269	860.2	6.5	6.3	



Comparative statistics for power: 1919 and 1909.—Comparative statistics relating to the number and horsepower of various types of prime movers and of electric motors used by coal-mining enterprises are given by mining regions in Table 12. In Table 42, which follows, the horsepower used per mine, per wage earner, and per thousand tons of coal produced in 1919 and 1909 are compared for anthracite enterprises and for bituminous coal-mining enterprises in the United States as a whole. The table shows notable advance in the industry through increased use of power and hence of mechanical equipment.

TABLE 42.—COMPARATIVE STATISTICS, POWER USED, PER MINE, PER WAGE EARNER, AND PER 1,000 TONS OF COAL PRODUCED: 1919 AND 1909.

	POWER USED (AGGREGATE HORSEPOWER).			
	Total.	Per mine.	Per wage earner.	Per 1,000 tons (2,000 pounds) of coal produced.
All producing coal enterprises:				
1919.....	3,055,195		4.4	5.6
1909.....	1,904,154		2.8	4.2
Per cent of increase.....	60.4		57.1	33.8
Anthracite (Pennsylvania):				
1919.....	899,783		6.1	10.2
1909.....	676,128		4.0	8.4
Per cent of increase.....	33.1		52.5	21.4
Bituminous coal:				
1919.....	2,155,412	260	3.9	4.7
1909.....	1,228,026	204	2.4	3.3
Per cent of increase.....	75.5	27.4	62.5	42.4

#### METHOD OF OPERATION.

Principal statistics for anthracite enterprises classified according to character of operation.—At the Census of 1919 anthracite enterprises were grouped in four classes according to the character of operations as follows: (1) Enterprises which operated only mines and produced only fresh run-of-mine coal; (2) enterprises which operated breakers, generally in connection with one or more mines, and some of which also

operated washeries. Enterprises of this class produced chiefly freshly mined coal which was for the most part cleaned and sized at the breakers, but some of these enterprises which also operated washeries marketed some washery product which was not freshly mined coal. Unfortunately, the records of such operating companies would not permit a segregation of census data for washeries as distinct from mining operations; (3) enterprises which operated only culm washeries, the product of which was not freshly mined coal; and (4) enterprises which operated river dredges, the product of which was not freshly mined coal.

Table 43 shows the quantity and value of products as compiled by the United States Geological Survey for mines and breakers producing freshly mined coal separately from the product of washeries and dredges which was not freshly mined coal. The freshly mined coal represented 97 per cent of the total quantity and value of anthracite produced. The culm washery product represented nearly all of the remainder and the dredge product was negligibly small.

TABLE 43.—ANTHRACITE PRODUCED, BY DIFFERENT METHODS: 1919.<sup>1</sup>

	Quantity (tons, 2,240 pounds).	Value (total).
Total.....	76,653,751	\$364,926,960
Mine and breaker product (freshly mined coal)....	74,161,964	353,104,449
Washery product.....	3,872,964	10,953,755
Dredge product.....	618,833	868,746

<sup>1</sup> U. S. Geological Survey, Mineral Resources of the United States.

In Table 44 the principal statistics are shown separately for anthracite enterprises so far as it is possible to segregate them by character of operation. The table also shows the per cent each class of enterprises contributes to the total for each item. Other statistics for anthracite enterprises classified according to character of operation are given in Tables 5, 20, 26, 27, 37, 39, and 40.

TABLE 44.—PRINCIPAL STATISTICS FOR ANTHRACITE ENTERPRISES, CLASSIFIED ACCORDING TO CHARACTER OF OPERATION: 1919.

	All enterprises.	ENTERPRISES OPERATING—							
		Breakers, mines, and washeries.		Mines only.		Culm washeries.		River dredges.	
		Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.
Number of enterprises.....	254	140	55.1	16	6.3	19	7.5	79	31.1
Number of mines.....	374	358	95.7	16	4.3				
Number of breakers.....	245	245	100.0						
Number of culm washeries.....	79	60	75.9			19	24.1		
Number of dredges.....	81							81	100.0
Coal land operated..... acres	261,355	252,671	96.7	8,684	3.3				
Owned..... acres	194,390	192,081	98.8	2,309	1.2				
Held under lease..... acres	77,965	71,528	91.8	6,427	8.2				
Persons engaged.....	154,882	150,928	97.4	2,948	1.9	406	0.3	515	0.3
Proprietors and firm members (total).....	159	45	28.3	1	0.6			113	71.1
Number performing manual labor.....	24	9	38.5	1	2.9			24	70.6
Salaried employees.....	7,351	7,079	95.8	164	2.2	62	0.8	46	0.6
Wage earners (average number).....	147,373	143,799	97.6	2,783	1.9	434	0.3	356	0.2
Wage earners, Dec. 15 or nearest representative day.....	152,243	147,972	97.2	3,053	2.0	733	0.5	485	0.3
Above ground.....	46,618	44,756	96.0	644	1.4	733	1.6	485	1.0
Below ground.....	106,625	103,216	97.7	2,409	2.3				
Power used (aggregate horsepower).....	899,788	875,088	97.3	14,886	1.7	6,067	0.7	3,742	0.4
Capital.....	\$433,868,089	\$421,597,304	97.2	\$8,748,296	2.0	\$1,948,053	0.4	\$1,579,384	0.4
Principal expenses:									
Salaries.....	\$12,995,460	\$12,485,109	96.1	\$313,832	2.4	\$137,531	1.1	\$58,997	0.5
Wages.....	\$210,289,473	\$205,758,460	97.8	\$3,641,559	1.7	\$502,908	0.2	\$326,551	0.2
Contract work.....	\$1,557,845	\$1,439,588	92.4	\$76,779	4.9	\$40,200	2.6	\$1,278	0.1
Supplies and materials <sup>1</sup> .....	\$59,738,376	\$57,944,018	97.0	\$1,320,548	2.2	\$284,689	0.5	\$129,121	0.3
Fuel.....	\$11,406,117	\$11,221,531	98.4	\$108,767	0.9	\$20,314	0.2	\$57,005	0.5
Purchased power.....	\$1,899,835	\$1,721,959	90.6	\$76,581	4.0	\$90,535	4.8	\$10,460	0.6
Royalties and rents.....	\$11,766,598	\$11,056,094	94.1	\$338,464	2.9	\$342,616	2.9	\$18,324	0.2
Taxes.....	\$14,080,968	\$13,907,474	98.9	\$143,068	1.0	\$7,304	0.1	\$2,462	(*)
Products, total value.....	\$364,084,142	\$353,549,591	97.1	\$7,456,219	2.0	\$2,174,200	0.6	\$904,132	0.2
Coal—									
Quantity..... tons, 2,240 pounds..	78,723,668	75,709,088	96.2	1,709,181	2.2	684,084	0.9	621,365	0.8
Value at mine.....	\$363,944,774	\$353,421,982	97.1	\$7,455,516	2.0	\$2,174,200	0.6	\$908,066	0.2

<sup>1</sup> Exclusive of \$433,318, the cost of anthracite purchased for resale.

\* Less than one-tenth of 1 per cent.

Classification of bituminous coal enterprises.—The Census of Mines and Quarries for 1919 recognized only two classes of bituminous coal mines on the basis of mining method—enterprises using mining machines and enterprises operating without mining machines. Other classifications according to mining methods, for example, such as would be based on the kind of mine opening, was not made by the Bureau of the Census, and information bearing on such classification, which was collected by the Bureau of the Census and the Geological Survey cooperatively, has been compiled by the Geological Survey.

The census classification of bituminous-coal enterprises in 1919, according to the method of operation, was based arbitrarily on the use of mining machines regardless of the quantity of coal mined with or without machines, because although in some mines practically the entire output of coal is machine mined and in others it is mined by hand without the use of machines or shot from the solid, in most mines the output is partly machine mined and partly hand mined, and the census data other than that relating

to product could not be apportioned in accordance with the tonnage mined one way or another. In the census statistics enterprises classified as using mining machines include those mines using various types of machines for undercutting and shearing coal and also those mines using steam-shovels or other large excavating machines in opencuts or strip pits. Statistics for bituminous coal-mining enterprises, classified according to mining method, are shown in Tables 16, 18, 22, 26, 27, 39, 41, 45, and 46.

The tonnage mined by machines and otherwise, as reported by the United States Geological Survey, is shown by states in Table 45, which also gives the per cent of the total mined by each method. The table shows that in the United States as a whole about 60 per cent of the total tonnage was mined by machines; but the percentages shown for the separate states ranged from less than 1 per cent in Texas to nearly 95 per cent in Michigan. The percentages in this table do not accord with those in Table 46 in which, as explained above, the data are not apportioned according to the tonnages mined with and without machines.

## MINES AND QUARRIES.

TABLE 45.—BITUMINOUS COAL MINED BY DIFFERENT METHODS IN 1919.<sup>1</sup>

STATE.	Total (tons, 2,000 pounds).	Mined by hand.		Shot from the solid.		Mined by machines.		Mined in strip pits.		Not accounted for.	
		Tons (2,000 pounds).	Per cent of total.	Tons (2,000 pounds).	Per cent of total.	Tons (2,000 pounds).	Per cent of total.	Tons (2,000 pounds).	Per cent of total.	Tons (2,000 pounds).	Per cent of total.
United States.....	465,860,058	100,715,932	23.6	71,103,293	15.3	276,019,799	59.2	5,774,900	1.2	3,246,134	0.7
Alabama.....	15,536,721	2,765,365	17.8	7,289,462	46.9	5,135,655	33.1	276,454	1.8	69,785	0.4
Arkansas.....	1,429,020	54,702	3.8	1,238,187	86.6	113,218	7.9	10,982	0.8	11,931	0.9
Colorado.....	10,323,420	5,056,839	49.0	1,025,639	9.9	4,157,836	40.3	.....	.....	83,106	0.8
Georgia.....	53,337	.....	.....	53,337	100.0	.....	.....	.....	.....	.....	.....
Illinois.....	60,882,608	4,518,306	7.4	19,794,179	32.5	35,913,902	59.0	413,909	0.7	222,312	0.4
Indiana.....	20,912,288	1,651,665	7.9	7,373,601	35.3	10,819,551	51.7	906,873	4.3	158,696	0.8
Iowa.....	5,624,692	1,144,701	20.4	3,706,060	65.9	659,209	11.7	.....	.....	111,722	2.0
Kansas.....	5,224,724	144,861	2.8	4,421,792	84.7	54,670	1.0	584,112	11.2	19,289	0.3
Kentucky.....	30,036,061	1,229,768	4.1	4,536,474	15.1	23,965,661	79.8	11,261	.....	292,897	1.0
Maryland.....	3,021,686	2,288,571	75.7	401,066	13.3	311,324	10.3	8,357	0.3	12,368	0.4
Michigan.....	996,545	12,890	1.3	36,600	4.0	943,519	94.7	.....	.....	546	.....
Missouri.....	3,979,798	614,286	15.4	1,370,414	34.4	888,657	22.3	960,511	24.2	145,380	3.7
Montana.....	3,236,369	377,849	11.7	1,372,239	42.4	1,429,304	44.2	.....	.....	56,977	1.7
New Mexico.....	3,138,766	2,089,413	66.0	129,216	4.1	967,549	30.5	.....	.....	12,578	0.4
North Dakota.....	840,959	51,352	6.1	336,696	38.8	324,961	38.6	11,003	1.3	126,945	15.2
Ohio.....	35,876,682	1,354,739	3.8	945,464	2.6	31,238,608	87.1	1,749,435	4.9	590,436	1.6
Oklahoma.....	3,802,113	30,761	0.8	1,796,838	47.3	1,796,933	47.3	158,694	4.2	14,887	0.4
Pennsylvania.....	180,768,164	57,222,242	38.0	5,369,605	3.6	86,382,120	57.3	670,507	0.4	1,113,680	0.7
Tennessee.....	5,213,205	1,290,934	24.8	2,305,838	44.2	1,597,499	30.6	9,944	0.2	9,005	0.2
Texas.....	1,680,656	1,298,826	77.0	376,348	22.4	10,267	0.6	.....	.....	215	.....
Utah.....	4,631,323	1,123,606	24.3	314,332	6.8	3,187,766	68.8	.....	.....	5,619	0.1
Virginia.....	9,326,830	1,286,853	13.8	1,717,200	18.4	6,312,020	67.7	.....	.....	10,667	0.1
Washington.....	2,990,447	1,937,697	64.8	779,635	26.1	273,115	9.1	.....	.....	.....	.....
West Virginia.....	79,036,553	20,989,708	26.5	2,375,934	3.0	55,582,196	70.3	.....	.....	158,715	0.2
Wyoming.....	7,219,738	1,256,360	17.4	1,976,096	27.3	3,982,269	55.2	.....	.....	5,013	0.1
Other states.....	107,373	28,748	26.8	64,954	60.5	.....	.....	858	0.8	12,813	11.9

<sup>1</sup> U. S. Geological Survey, Mineral Resources of the United States.

Principal statistics for bituminous coal-mining enterprises, classified according to the use of mining machines.—Table 46 shows, for selected states by mining regions, the principal statistics for producing bituminous-coal enterprises classified according to the use of mining machines. This table shows for the United States that 39.5 per cent of the enterprises using mining machines employed 75.6 per cent of the total average number of wage earners and reported 78.4 per cent of the total value of products. Great differences, however, are shown among the states in the

percentage of enterprises using mining machines—from approximately 6 in Arkansas to nearly 62 in West Virginia. The percentage of value of products for such enterprises ranged from 9.5 in Arkansas to 95.7 in Utah. It should be noted that although the use of mining machines generally indicates more advanced and more efficient methods of mine operations there are some mines in some localities where conditions and scale of operation or size of output do not warrant the use of mining machines.

TABLE 46.—PRINCIPAL STATISTICS FOR BITUMINOUS COAL PRODUCING ENTERPRISES, BY MINING METHOD, FOR SELECTED STATES: 1919.

REGION AND STATE.	ENTERPRISES.		MINES.		WAGE EARNERS.		POWER USED.		WAGES.	
	Number.	Per cent of total.	Number.	Per cent of total.	Average number.	Per cent of total.	Aggregate horsepower.	Per cent of total.	Amount.	Per cent of total.
<b>UNITED STATES</b> .....	6,636	100.0	8,282	100.0	545,798	100.0	2,155,412	100.0	\$682,001,068	100.0
Enterprises without mining machines.....	4,018	60.5	4,412	53.3	133,228	24.4	380,491	17.7	164,887,768	22.7
Enterprises using mining machines.....	2,618	39.5	3,870	46.7	412,570	75.6	1,774,921	82.3	527,113,300	77.3
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS:</b>										
<b>Kentucky, eastern—</b>										
Enterprises without mining machines.....	284	60.6	287	52.0	4,886	17.0	3,208	3.5	5,129,002	14.5
Enterprises using mining machines.....	185	39.4	265	48.0	23,903	83.0	88,279	96.5	30,235,688	85.5
<b>Maryland—</b>										
Enterprises without mining machines.....	47	81.0	62	67.4	2,340	48.5	3,225	25.9	2,470,820	45.9
Enterprises using mining machines.....	11	19.0	30	32.6	2,486	51.5	9,245	74.1	2,916,189	54.1
<b>Ohio—</b>										
Enterprises without mining machines.....	386	49.0	403	44.9	3,429	8.5	6,662	4.9	3,616,213	7.6
Enterprises using mining machines.....	402	61.0	496	58.1	37,023	91.5	129,483	95.1	44,189,436	92.4
<b>Pennsylvania—</b>										
Enterprises without mining machines.....	1,283	66.2	1,428	55.3	27,967	18.1	67,783	10.3	35,139,722	18.6
Enterprises using mining machines.....	665	33.8	1,156	44.7	127,006	81.9	591,180	89.7	176,306,971	83.4
<b>Tennessee, northeastern—</b>										
Enterprises without mining machines.....	54	58.7	64	54.7	1,870	25.8	4,424	22.9	1,681,113	24.2
Enterprises using mining machines.....	38	41.3	53	45.3	5,376	74.2	14,857	77.1	5,266,078	75.8
<b>Virginia—</b>										
Enterprises without mining machines.....	68	63.0	71	60.2	1,703	15.2	2,656	6.4	1,784,409	12.8
Enterprises using mining machines.....	40	37.0	47	39.8	9,512	84.8	38,974	93.6	11,177,182	86.2
<b>West Virginia—</b>										
Enterprises without mining machines.....	356	38.4	400	31.1	10,412	12.0	20,484	5.8	12,114,626	11.5
Enterprises using mining machines.....	570	61.6	887	68.9	76,683	88.0	334,995	94.2	93,646,524	88.5
<b>SOUTHERN APPALACHIAN REGION:</b>										
<b>Alabama—</b>										
Enterprises without mining machines.....	139	73.9	172	66.2	11,321	45.9	35,041	37.0	12,671,558	44.7
Enterprises using mining machines.....	49	26.1	88	33.8	13,327	54.1	61,098	63.0	18,655,862	55.3
<b>EASTERN INTERIOR REGION:</b>										
<b>Illinois—</b>										
Enterprises without mining machines.....	282	63.1	291	58.3	21,050	28.5	57,630	22.5	23,475,399	26.7
Enterprises using mining machines.....	165	36.9	208	41.7	52,730	71.5	198,512	77.5	64,320,929	73.3
<b>Indiana—</b>										
Enterprises without mining machines.....	175	59.3	176	55.5	7,100	29.0	20,829	20.9	7,358,664	26.4
Enterprises using mining machines.....	120	40.7	141	44.5	17,379	71.0	78,756	79.1	20,519,006	73.6
<b>Kentucky, western—</b>										
Enterprises without mining machines.....	111	66.9	113	59.5	1,752	16.0	3,939	11.2	1,665,324	16.3
Enterprises using mining machines.....	55	33.1	77	40.5	9,228	84.0	31,378	88.8	8,584,649	83.7
<b>WESTERN INTERIOR REGION:</b>										
<b>Iowa—</b>										
Enterprises without mining machines.....	144	86.2	160	82.1	6,630	62.6	17,366	66.5	7,052,048	60.3
Enterprises using mining machines.....	23	13.8	35	17.9	3,964	37.4	8,757	33.5	4,636,870	39.7
<b>Kansas—</b>										
Enterprises without mining machines.....	99	76.7	126	75.9	7,099	86.7	15,861	67.7	8,646,628	86.9
Enterprises using mining machines.....	30	23.3	40	24.1	1,075	13.3	7,578	32.3	1,902,628	13.1
<b>Missouri—</b>										
Enterprises without mining machines.....	127	70.9	133	67.9	4,002	54.9	9,823	34.6	4,285,153	52.5
Enterprises using mining machines.....	52	29.1	63	32.1	3,283	45.1	18,562	65.4	3,871,799	47.5
<b>SOUTHERN INTERIOR REGION:</b>										
<b>Arkansas—</b>										
Enterprises without mining machines.....	80	94.1	86	94.5	2,568	92.1	13,305	88.5	3,242,392	93.3
Enterprises using mining machines.....	5	5.9	5	5.5	219	7.9	1,722	11.5	282,627	6.7
<b>Oklahoma—</b>										
Enterprises without mining machines.....	58	61.7	78	59.5	3,278	46.6	16,935	46.4	3,973,129	45.2
Enterprises using mining machines.....	36	38.3	53	40.5	3,762	53.4	19,548	53.6	4,816,807	54.8
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS:</b>										
<b>Colorado—</b>										
Enterprises without mining machines.....	78	48.4	78	47.6	3,733	33.2	20,770	33.0	5,482,049	32.6
Enterprises using mining machines.....	83	51.6	86	52.4	7,519	66.8	42,246	67.0	11,351,264	67.4
<b>Montana—</b>										
Enterprises without mining machines.....	44	65.7	46	60.5	679	17.9	5,841	21.6	375,616	15.4
Enterprises using mining machines.....	23	34.3	30	39.5	3,118	82.1	21,236	78.4	4,828,194	84.6
<b>New Mexico—</b>										
Enterprises without mining machines.....	13	61.9	15	44.1	276	7.7	685	3.8	318,351	5.6
Enterprises using mining machines.....	8	38.1	19	55.9	3,288	92.3	17,378	96.2	5,323,393	94.4
<b>North Dakota—</b>										
Enterprises without mining machines.....	71	89.9	71	89.9	384	49.6	624	30.6	517,068	50.2
Enterprises using mining machines.....	8	10.1	8	10.1	390	50.4	1,413	69.4	512,058	49.8
<b>South Dakota—</b>										
Enterprises without mining machines.....	5	.....	5	.....	8	.....	49	.....	11,423	.....
Enterprises using mining machines.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<b>Utah—</b>										
Enterprises without mining machines.....	15	55.6	15	44.1	234	6.4	900	3.7	320,030	4.2
Enterprises using mining machines.....	12	44.4	19	55.9	3,413	93.6	23,129	96.3	7,278,787	95.8
<b>Washington—</b>										
Enterprises without mining machines.....	29	82.9	37	86.0	3,811	86.4	29,425	91.4	5,794,430	88.9
Enterprises using mining machines.....	6	17.1	6	14.0	602	13.6	2,765	8.6	721,558	11.1
<b>Wyoming—</b>										
Enterprises without mining machines.....	19	41.3	24	36.9	1,636	23.1	11,806	25.1	2,546,915	24.2
Enterprises using mining machines.....	27	58.7	41	63.1	5,455	76.9	35,269	74.9	7,998,119	75.8

TABLE 46.—PRINCIPAL STATISTICS FOR BITUMINOUS COAL PRODUCING ENTERPRISES, BY MINING METHOD, FOR SELECTED STATES: 1919—Continued.

REGION AND STATE.	SUPPLIES AND MATERIALS.		COST OF FUEL.		COST OF PURCHASED POWER.		VALUE OF ALL PRODUCTS.		COAL PRODUCED (TONS, 2,000 POUNDS).	
	Amount.	Per cent of total.	Amount.	Per cent of total.	Amount.	Per cent of total.	Amount.	Per cent of total.	Quantity.	Per cent of total.
<b>UNITED STATES</b> .....	\$142,432,551	100.0	\$25,996,660	100.0	\$11,280,509	100.0	\$1,145,977,565	100.0	460,425,836	100.0
Enterprises without mining machines.....	28,308,535	19.9	6,053,791	23.4	1,447,323	12.8	247,069,572	21.6	92,860,744	20.2
Enterprises using mining machines.....	114,124,016	80.1	19,942,869	76.6	9,833,186	87.2	898,907,993	78.4	367,565,092	79.8
<b>NORTHERN AND MIDDLE APPALACHIAN REGIONS:</b>										
Kentucky, eastern—										
Enterprises without mining machines.....	1,426,822	16.4	73,678	8.5	8,736	1.6	7,684,814	14.1	2,941,059	13.9
Enterprises using mining machines.....	7,264,403	83.6	792,890	91.5	548,925	98.4	46,818,649	85.9	18,209,837	86.1
Maryland—										
Enterprises without mining machines.....	366,244	39.4	20,669	15.5	20,375	40.7	3,800,174	47.5	1,476,465	49.3
Enterprises using mining machines.....	563,081	60.6	112,719	84.5	29,666	59.3	4,305,493	52.5	1,520,871	50.7
Ohio—										
Enterprises without mining machines.....	565,839	6.2	107,671	7.5	21,602	2.3	6,082,565	7.8	2,364,135	6.7
Enterprises using mining machines.....	8,539,994	93.8	1,325,812	92.5	903,700	97.7	71,906,037	92.2	32,776,406	93.3
Pennsylvania—										
Enterprises without mining machines.....	7,186,454	16.0	849,129	11.2	392,602	11.1	58,965,089	16.2	23,541,260	15.7
Enterprises using mining machines.....	37,725,913	84.0	6,750,530	88.8	3,120,099	88.9	304,008,863	83.8	126,488,427	84.3
Tennessee, northeastern—										
Enterprises without mining machines.....	620,850	35.5	67,374	22.9	35,379	69.8	2,567,007	22.7	898,912	21.8
Enterprises using mining machines.....	1,123,383	64.5	226,700	77.1	15,276	30.2	8,746,728	77.3	3,228,267	78.2
Virginia—										
Enterprises without mining machines.....	417,687	12.2	66,837	23.6	3,397	0.8	2,793,541	11.7	1,077,886	11.5
Enterprises using mining machines.....	3,014,761	87.8	216,959	76.4	435,866	99.2	20,979,899	88.3	8,266,900	88.5
West Virginia—										
Enterprises without mining machines.....	2,567,471	9.8	239,647	8.8	122,806	4.3	21,463,899	11.1	8,268,173	10.6
Enterprises using mining machines.....	23,425,813	90.2	2,485,440	91.2	2,730,535	95.7	171,664,444	88.9	69,888,937	89.4
<b>SOUTHERN APPALACHIAN REGION:</b>										
Alabama—										
Enterprises without mining machines.....	1,978,198	36.5	691,043	47.5	148,955	31.5	20,920,103	46.1	6,891,224	44.7
Enterprises using mining machines.....	3,441,979	63.5	765,141	52.5	323,235	68.5	24,439,338	53.9	8,520,212	55.3
<b>EASTERN INTERIOR REGION:</b>										
Illinois—										
Enterprises without mining machines.....	3,466,015	22.6	1,108,475	26.7	176,429	26.4	35,720,461	25.7	15,265,064	25.3
Enterprises using mining machines.....	11,879,483	77.4	3,046,269	73.3	491,713	73.6	103,047,374	74.3	45,065,586	74.7
Indiana—										
Enterprises without mining machines.....	1,176,600	21.9	365,780	25.1	16,657	10.5	11,674,062	25.7	5,297,464	25.8
Enterprises using mining machines.....	4,202,800	78.1	1,089,343	74.9	142,489	89.5	33,818,674	74.3	15,207,327	74.2
Kentucky, western—										
Enterprises without mining machines.....	323,818	14.4	65,612	9.6	2,410	22.4	2,596,109	14.5	1,181,877	14.3
Enterprises using mining machines.....	1,929,897	85.6	620,878	90.4	8,364	77.6	15,333,268	85.5	7,068,245	85.7
<b>WESTERN INTERIOR REGION:</b>										
Iowa—										
Enterprises without mining machines.....	1,020,064	58.0	335,903	74.6	69,253	57.4	10,448,388	61.8	3,340,940	61.0
Enterprises using mining machines.....	737,961	42.0	114,094	25.4	51,413	42.6	6,464,970	38.2	2,133,309	39.0
Kansas—										
Enterprises without mining machines.....	1,473,864	77.3	390,581	81.5	29,783	53.6	13,315,862	84.6	4,410,891	84.8
Enterprises using mining machines.....	432,209	22.7	88,739	18.5	25,737	46.4	2,432,673	15.4	793,497	15.2
Missouri—										
Enterprises without mining machines.....	579,964	42.0	145,675	34.0	27,167	38.3	5,690,997	46.9	1,961,638	49.2
Enterprises using mining machines.....	801,269	58.0	282,167	66.0	43,730	61.7	6,416,846	53.1	1,922,076	50.8
<b>SOUTHERN INTERIOR REGION:</b>										
Arkansas—										
Enterprises without mining machines.....	603,462	84.2	164,040	95.6	76,657	80.1	4,791,407	90.5	1,308,039	90.8
Enterprises using mining machines.....	113,153	15.8	7,566	4.4	18,992	19.9	500,867	9.5	132,454	9.2
Oklahoma—										
Enterprises without mining machines.....	571,426	41.1	275,700	43.3	37,528	33.3	5,961,985	41.2	1,551,651	41.0
Enterprises using mining machines.....	829,345	58.9	360,614	56.7	75,045	66.7	8,515,332	58.8	2,231,143	59.0
<b>NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS:</b>										
Colorado—										
Enterprises without mining machines.....	1,052,579	34.5	222,759	35.8	97,207	22.0	8,368,238	29.5	3,042,306	29.9
Enterprises using mining machines.....	1,999,449	65.5	400,164	64.2	345,064	78.0	19,973,957	70.5	7,140,206	70.1
Montana—										
Enterprises without mining machines.....	194,302	16.4	85,142	30.4	15,638	26.1	1,438,209	16.7	503,354	15.7
Enterprises using mining machines.....	989,508	83.6	195,167	69.6	44,341	73.9	7,153,002	33.3	2,706,365	84.3
New Mexico—										
Enterprises without mining machines.....	105,841	10.8	20,628	15.1	4,354	6.5	545,103	5.5	163,897	5.1
Enterprises using mining machines.....	869,901	89.2	115,631	84.9	62,847	93.5	9,360,488	94.5	3,021,587	94.9
North Dakota—										
Enterprises without mining machines.....	163,186	57.5	15,236	46.4	1,368	28.3	1,070,088	55.5	420,022	54.7
Enterprises using mining machines.....	120,447	42.5	17,617	53.6	3,473	71.7	857,216	44.5	347,673	45.3
South Dakota—										
Enterprises without mining machines.....	987	.....	105	.....	.....	.....	29,892	.....	9,306	.....
Utah—										
Enterprises without mining machines.....	72,552	4.6	13,907	8.1	5,651	5.7	537,820	4.3	202,289	4.4
Enterprises using mining machines.....	1,492,403	95.4	156,141	91.9	93,445	94.3	12,094,205	95.7	4,360,558	95.6
Washington—										
Enterprises without mining machines.....	1,131,296	82.2	428,991	78.3	75,617	79.8	9,493,086	83.4	2,659,105	89.0
Enterprises using mining machines.....	244,958	17.8	118,733	21.7	19,116	20.2	1,244,570	11.6	329,905	11.0
Wyoming—										
Enterprises without mining machines.....	592,478	25.9	116,425	29.6	57,668	18.6	4,008,632	21.4	1,626,528	22.6
Enterprises using mining machines.....	1,695,498	74.1	277,363	70.4	252,827	81.4	14,714,819	78.6	5,585,478	77.4

FUEL USED.

Table 47 shows for all coal-mining enterprises in the United States by regions and states the quantities of fuel used by kinds. As would be expected bituminous

coal was used almost entirely by bituminous-coal mines and anthracite coal only by anthracite mines, and very little other fuel was used by either.

TABLE 47.—QUANTITY OF FUEL USED, BY KINDS, ALL ENTERPRISES: 1919.

REGION AND STATE.	Coal <sup>1</sup> (tons, 2,000 pounds).	Coke (tons, 2,000 pounds).	Wood (cords).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).	REGION AND STATE.	Coal <sup>1</sup> (tons, 2,000 pounds).	Coke (tons, 2,000 pounds).	Wood (cords).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).
UNITED STATES.....	20,704,676	14,254	594	3,906	20,374	865,907	WESTERN INTERIOR REGION:						
Producing enterprises.....	20,702,985	14,254	594	3,906	20,344	865,907	Iowa.....	184,205			42	1,180	
Anthracite (Pennsylvania).....	19,578,081			671	1,881		Kansas.....	170,666		60	3	260	
Bituminous coal.....	11,124,904	14,254	594	3,235	18,963	865,907	Missouri.....	143,433		400	141	873	
NORTHERN AND MIDDLE APPALACHIAN REGIONS:							SOUTHERN INTERIOR REGION:						
Kentucky, eastern.....	333,040			12	1,188		Arkansas.....	65,978		5	63	185	
Maryland.....	46,264				382		Oklahoma.....	177,267				507	154,570
Ohio.....	675,165			95	1,421	2,468	Texas.....	53,867			860	155	110,913
Pennsylvania.....	3,904,925			196	5,008	310,914	NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS:						
Tennessee, northeastern.....	113,538		104	19	342		Colorado.....	296,894		25		34	
Virginia.....	113,881			90	372		Montana.....	163,456				113	
West Virginia.....	1,124,614			339	2,424	287,042	New Mexico.....	46,834				14	
SOUTHERN APPALACHIAN REGION:							North Dakota.....	16,437				451	
Alabama.....	509,815	14,254		360	780		South Dakota.....	25				15	
Georgia, North Carolina, and Tennessee, southeastern.....	35,657			168	95		Utah.....	83,907					
MICHIGAN REGION.....	83,824						Washington.....	173,032			23	103	
EASTERN INTERIOR REGION:							Wyoming.....	223,042				91	
Illinois.....	1,946,807			370	1,830		California, Idaho, Oregon.....	5,384				3	
Indiana.....	705,031				1,087		Nonproducing enterprises.....	1,691				30	
Kentucky, western.....	346,903			455	180		Pennsylvania.....	40				10	
							West Virginia.....						
							All other states <sup>2</sup> .....	1,651				20	

<sup>1</sup> Bituminous coal, except 9,578,985 tons of anthracite reported used in the Pennsylvania anthracite region.  
<sup>2</sup> Includes Illinois, Kansas, Kentucky, Texas, and Washington.

GENERAL TABLE.

Table 48 presents in detail for 1919 statistics relating to coal mines in the United States as a whole, for anthracite and bituminous coal separately, and for each of the mining regions and states that can be shown separately without the disclosure of individual operations. It shows separately the statistics for the enterprises and mines which produced coal in 1919 and statistics for those enterprises in which all opera-

tions were confined to development work. The table gives the number of enterprises and mines; the acreage of coal land classified according to tenure, and acreage of other lands; persons engaged in the industry, by classes; capital invested; the principal expenses of operation and development; the quantity and value of products; and statistics with regard to power equipment used.

TABLE 48.—DETAILED STATISTICS FOR THE COAL-MINING

1	REGION AND STATE.	Number of enterprises.	Number of mines.	Number of enterprises operating breakers and washeries.	LAND CONTROLLED (ACRES).				PERSONS ENGAGED IN INDUSTRY.						
					Coalland.				Aggregate.	Proprietors and officials.					
					Operated.	Owned.	Held under lease.	Timber and other lands.		Total.	Proprietors and firm members.		Salaried officers.	Superintendents and managers.	Technical employees.
											Total.	Per-forming manual labor.			
1	United States.....	6,916	8,842	374	8,547,434	6,002,356	2,616,907	911,230	739,019	26,573	4,401	1,006	6,116	12,563	3,468
2	Producing enterprises.....	6,890	8,816	374	8,522,737	5,988,041	2,608,517	911,183	738,490	26,523	4,396	1,004	6,108	12,571	3,453
3	Anthracite (Pennsylvania).....	1,254	1,534	140	251,355	194,300	77,955	159,710	154,832	4,120	159	34	233	2,821	907
4	Bituminous coal.....	6,636	8,282	134	8,261,372	5,793,651	2,528,562	751,473	583,658	22,403	4,237	1,970	5,875	9,750	2,546
5	NORTHERN AND MIDDLE APPALACHIAN REGIONS.	4,379	5,648	28	4,859,029	3,141,991	1,766,737	437,299	358,785	14,634	2,890	1,017	3,839	6,154	1,751
6	Kentucky, eastern.....	469	552	1	529,814	292,313	237,776	67,389	31,068	1,610	148	37	503	693	266
7	Maryland.....	58	92	1	53,442	34,168	19,318	7,228	5,180	222	29	10	69	93	31
8	Ohio.....	788	898	.....	442,857	348,214	112,280	27,358	43,433	1,993	622	312	533	723	110
9	Pennsylvania.....	1,938	2,584	11	1,491,919	1,112,956	381,720	187,722	165,044	6,205	1,743	575	1,410	2,480	572
10	Tennessee, northeastern.....	92	117	1	108,784	19,390	89,914	59,400	7,753	318	33	9	85	170	30
11	Virginia.....	108	118	3	397,976	312,376	86,639	8,309	11,940	392	42	11	98	198	54
12	West Virginia.....	926	1,287	11	1,824,207	1,022,574	838,090	79,893	93,767	3,894	273	63	1,136	1,797	688
13	SOUTHERN APPALACHIAN REGION.....	205	288	53	848,071	719,299	130,142	58,400	28,800	851	36	4	242	384	189
14	Alabama.....	188	260	50	663,793	563,894	90,739	47,127	26,162	799	33	4	219	360	177
15	Georgia, North Carolina, and Tennessee, southeastern.....	17	28	3	194,278	155,375	39,403	11,333	2,638	62	3	.....	23	24	12
16	MICHIGAN REGION.....	11	14	.....	9,169	1,921	7,243	1,360	1,744	53	.....	.....	13	32	8
17	EASTERN INTERIOR REGION.....	908	1,006	20	1,129,818	861,906	273,162	88,115	115,415	3,787	479	289	1,011	1,954	343
18	Illinois.....	447	499	19	752,316	596,082	158,153	44,825	77,825	2,339	199	114	561	1,350	229
19	Indiana.....	295	317	1	176,200	106,763	72,743	10,083	25,911	968	170	116	298	421	79
20	Kentucky, western.....	166	190	.....	201,302	159,061	42,261	33,207	11,679	480	110	59	152	183	35
21	WESTERN INTERIOR REGION.....	475	557	4	201,235	92,530	111,000	18,894	27,713	1,219	446	299	308	421	44
22	Iowa.....	167	195	.....	66,359	31,662	35,942	3,513	11,239	485	178	136	122	173	12
23	Kansas.....	129	166	.....	73,559	30,629	43,880	14,141	8,622	309	111	78	65	113	20
24	Missouri.....	179	196	4	61,317	30,239	31,178	940	7,852	425	157	85	121	135	12
25	SOUTHERN INTERIOR REGION.....	212	264	1	179,481	71,388	108,330	91,428	14,263	612	115	86	166	301	30
26	Arkansas.....	85	91	1	24,421	12,226	12,270	826	3,095	212	78	63	36	94	4
27	Oklahoma.....	94	181	.....	104,936	26,729	78,239	5,468	8,296	290	33	21	86	154	17
28	Texas.....	33	42	.....	50,124	32,433	17,721	85,134	2,862	110	4	2	44	53	9
29	NORTHERN GREAT PLAINS, ROCKY MOUNTAIN, AND PACIFIC COAST REGIONS.	446	505	28	1,034,599	904,646	131,943	56,217	36,898	1,247	271	135	291	504	181
30	Colorado.....	161	164	4	127,881	89,608	38,573	3,657	12,017	386	56	43	116	184	30
31	Montana.....	67	76	1	73,967	55,124	20,163	6,979	4,056	174	70	37	35	56	13
32	New Mexico.....	21	34	2	641,125	614,619	26,506	16,035	3,774	117	10	3	13	54	40
33	North Dakota.....	79	79	.....	17,734	9,305	8,429	824	939	135	75	23	16	27	17
34	South Dakota.....	5	5	.....	880	720	160	640	16	8	8	7	.....	.....	.....
35	Utah.....	27	34	.....	46,891	44,632	2,519	9,614	3,926	133	26	9	85	46	26
36	Washington.....	35	43	20	65,940	44,368	21,812	14,778	4,654	118	10	7	24	58	26
37	Wyoming.....	46	65	.....	57,562	44,626	13,036	3,280	7,427	169	14	6	60	77	23
38	California, Idaho, and Oregon.....	5	5	1	2,589	1,844	745	410	89	7	2	.....	2	2	1
39	Nonproducing enterprises.....	26	26	.....	34,707	14,317	10,390	97	599	50	5	2	13	17	15
40	Pennsylvania.....	10	10	.....	8,722	6,946	1,776	63	135	23	4	2	2	6	11
41	West Virginia.....	3	3	.....	3,418	2,083	1,330	.....	20	6	.....	.....	2	3	1
42	All other states <sup>2</sup> .....	13	13	.....	12,567	5,283	7,284	34	374	21	1	.....	9	8	3

<sup>1</sup> Includes 156 colliery enterprises, comprising 374 mines, 245 breakers, and 60 washeries; 19 enterprises operating 19 culm washeries independently of mines; and 79 enterprises operating 81 river dredges.

<sup>2</sup> Includes enterprises in states as follows: Colorado, 1; Illinois, 1; Iowa, 1; Kansas, 1; Kentucky, 3; Ohio, 1; Oregon, 1; Texas, 1; Virginia, 1; Washington, 2.

INDUSTRY, BY REGIONS AND STATES: 1919.

		PERSONS ENGAGED IN INDUSTRY—continued.																					
		Wage earners.						Wage earners, Dec. 15 or nearest representative day.															
Clerks and other subordinate salaried employees.		Average number.		Number 15th day of—		Total.		Foreman, shift bosses, etc.		Enginemen, holstmen, electricians, mechanics, etc.		Miners, cutters, etc., including their helpers.		Timbermen, trackmen, and men engaged in hauling, etc.		Other laborers not classified.		In breakers and washeries.		Under 16 years of age (above ground).		Females (above ground).	
Male.	Female.	Maximum month.	Minimum month.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.
13,862	4,943	693,641	Oc 751,132	No 459,693	155,838	614,629	5,101	12,089	43,191	26,785	7,194	354,766	17,581	116,834	59,780	104,225	23,061		181	58			1
13,858	4,939	693,170	Oc 750,397	No 458,660	155,364	614,282	5,082	12,080	43,123	26,775	7,163	354,485	17,502	116,805	59,443	104,197	23,061		180	58			2
2,773	617	147,372	De 151,595	Ap 142,091	46,618	105,625	435	1,098	10,488	4,331	138	59,401	2,789	17,325	12,291	23,470	20,497		119				3
11,085	4,322	545,798	Oc 599,550	No 306,266	108,746	508,657	4,647	10,922	32,635	22,444	7,025	285,084	14,733	99,430	47,152	80,727	2,554		61				4
7,208	2,333	334,615	Oc 366,086	No 229,009	69,607	304,052	2,887	7,649	19,550	16,337	4,849	173,817	9,957	56,926	31,848	49,323	516		46				5
1,033	236	28,780	Oc 32,333	No 24,135	7,312	25,180	271	732	1,530	1,291	778	14,611	1,184	4,858	3,536	3,688	13		8				6
97	35	4,826	Oc 5,330	No 4,302	868	4,448	40	123	205	130	116	3,202	130	695	373	328	4		1				7
625	363	40,452	Se 47,253	No 9,827	8,046	39,831	354	641	2,681	1,498	396	17,948	839	7,622	3,776	12,122			1				8
2,682	1,165	154,992	Se 168,972	No 92,833	28,639	143,458	1,219	3,663	8,966	7,042	1,609	91,575	3,409	23,457	13,202	17,721	234		84				9
148	41	7,246	Oc 8,280	No 3,487	2,096	6,110	64	111	418	355	374	3,718	469	1,208	757	713	14						10
289	44	11,215	Oc 11,998	Ap 9,974	2,246	9,512	104	269	661	1,044	157	4,838	280	2,278	1,012	1,083	32						11
2,329	449	87,095	De 94,887	Mh 79,740	20,400	75,513	835	2,110	5,089	4,987	1,419	37,925	3,646	16,843	9,192	13,088	219		2				12
627	148	27,174	Fe 28,428	No 22,385	6,234	22,075	308	439	2,062	940	402	13,563	999	4,170	1,982	2,963	1,066						13
583	142	24,648	Mh 25,805	No 20,298	6,104	20,051	285	400	1,912	909	402	12,144	919	3,714	1,545	2,884	1,061						14
44	6	2,526	De 2,743	No 2,087	720	2,024	38	39	140	31		1,419	80	456	437	79	25						15
27	10	1,654	Fe 2,236	No 176	304	1,837	26	22	125	67	10	1,295	24	345	120	108							16
1,532	557	109,289	Ja 124,812	No 21,956	15,965	111,520	722	1,573	5,863	3,365	532	61,868	1,418	24,206	6,584	20,508	546		2				17
1,308	398	73,780	Ja 84,197	No 11,323	9,866	75,045	375	898	3,827	2,174	253	42,868	749	16,645	4,126	12,440	536						18
354	110	24,479	Oc 28,871	No 3,860	3,943	26,617	249	473	1,406	881	193	14,189	533	5,581	1,552	4,493	10		2				19
170	49	10,980	De 12,581	No 7,273	1,856	10,858	98	202	690	310	86	4,791	136	1,980	906	3,575							20
377	164	25,953	Ja 31,744	No 4,436	4,981	25,802	268	380	1,413	249	541	17,606	783	5,398	1,929	2,169	47						21
114	56	10,584	Ja 12,579	No 2,527	1,352	10,945	81	169	381	97	31	7,175	240	2,799	619	705							22
162	67	8,064	Ja 9,725	No 522	1,492	7,761	106	101	522	73	204	5,841	115	1,413	545	334							23
101	41	7,285	Ja 9,137	No 1,387	2,137	7,096	81	110	510	80	306	4,590	428	1,186	765	1,130	47						24
246	857	12,538	Se 14,712	No 2,788	2,641	12,404	134	247	942	177	371	8,176	388	2,741	780	1,063	26		8				25
83	13	2,787	Se 3,918	No 474	793	3,208	28	51	251	26	238	2,307	102	449	148	370	26						26
130	836	7,040	Oc 8,299	No 962	1,454	6,746	63	140	573	66	101	4,086	226	1,844	496	610							27
83	8	2,711	Ja 3,138	No 1,352	394	2,455	43	56	113	85	32	1,783	60	448	146	83			8				28
773	253	34,625	Ja 39,125	No 26,916	8,724	30,967	308	612	2,690	1,309	330	18,789	1,164	5,694	3,909	4,593	333		5				29
275	104	11,262	De 12,804	No 10,026	2,772	10,287	93	218	884	351	106	6,655	210	1,487	1,479	1,576	50						30
61	24	3,797	Ja 4,464	No 1,124	828	3,735	34	67	385	138	26	2,632	56	615	356	283	21						31
70	26	3,564	Ja 4,029	No 2,987	815	2,893	21	61	399	121		1,974	41	604	259	133	05						32
24	6	774	De 1,158	Je 472	318	836	15	16	42	16		35	550	35	191	96							33
135	11	3,647	Ja 16	Au 2	7	9			1			4	9	2									34
74	49	4,413	De 4,260	My 3,204	1,363	2,902	26	32	289	208	5	1,343	511	859	532	490							35
131	36	7,091	Ja 5,269	No 1,018	1,264	3,705	64	123	416	183	45	2,262	126	922	449	215	164		3				36
3		70	Ja 8,445	Je 6,117	1,307	6,488	52	91	372	286	89	3,253	182	1,035	612	1,823			2				37
			Fe 146	Jy 80	50	112	8	4	32	6	10	81	1	14	1	7	8						38
4	4	471	No 833	Ja 811	474	347	19	9	68	10	31	371	79	29	377	28							39
1	2	109	De 273	Ja 23	249	22	6	2	10			29	8	55	4	149	8						40
	1	13	No 29	Au 12	26	4	1		14			4			11								41
	1	349	No 558	Ja 188	199	321	12	7	44			2	259	24	25	117	20						42

\* Same number reported for 1 or more other months.



MINES AND QUARRIES.

TABLE 48.—DETAILED STATISTICS FOR THE COAL-MINING

REGION AND STATE.	Capital.	PRINCIPAL EXPENSES OF OPERATION AND DEVELOPMENT.									
		Total.	Salaries and wages.			Supplies and materials.	Cost of fuel.	Cost of purchased power.	Royalties and rents.	Taxes—Federal, State, county, and local.	Contract work.
			Salaried officers, superintendents, managers, and technical employees.	Clerks and other subordinate salaried employees.	Wage earners.						
1 United States.....	\$2,342,935,332	\$1,315,568,560	\$59,257,514	\$22,486,979	\$693,481,365	\$302,522,158	\$37,307,325	\$12,191,095	\$34,061,120	\$45,514,648	\$4,498,346
2 Producing enterprises.....	2,338,318,163	1,314,452,920	59,182,753	22,481,754	692,890,541	302,170,927	37,302,777	12,180,344	34,061,654	45,768,359	4,413,811
3 Anthracite (Pennsylvania).....	433,868,039	323,714,676	3,848,535	4,146,934	210,289,473	59,738,376	11,406,117	1,899,835	11,766,598	14,060,963	1,557,845
4 Bituminous coal.....	1,904,450,123	990,738,244	50,334,218	18,334,820	683,601,068	142,482,551	25,896,660	11,280,509	22,295,056	34,707,396	2,935,966
5 NORTHERN AND MIDDLE APPALACHIAN REGIONS.	1,326,507,550	626,379,398	31,484,891	11,477,346	425,516,157	94,803,715	13,336,055	8,398,964	16,041,319	23,448,191	1,872,780
6 Kentucky, eastern.....	113,822,426	53,255,983	3,298,065	1,288,989	35,365,880	8,691,225	966,568	557,661	1,566,304	1,244,984	188,207
7 Maryland.....	17,225,739	7,435,453	545,013	138,194	5,395,509	929,325	133,338	50,041	109,627	196,071	11,345
8 Ohio.....	144,508,537	67,671,240	3,941,079	1,162,018	47,748,648	9,105,833	1,455,453	925,302	1,420,770	1,563,444	371,663
9 Pennsylvania.....	645,625,810	304,297,637	13,023,723	5,015,500	211,946,963	44,912,367	7,599,659	3,523,701	6,005,527	12,253,433	615,064
10 Tennessee, northeastern.....	11,453,696	10,654,120	631,323	154,013	5,946,133	1,749,233	294,074	50,655	336,233	426,701	55,610
11 Virginia.....	45,759,454	20,449,233	373,065	427,064	12,361,591	3,432,448	232,736	439,283	679,464	1,130,332	222,280
12 West Virginia.....	344,014,848	162,565,592	9,069,964	3,183,598	105,761,150	25,983,284	2,725,037	2,853,341	5,925,361	6,644,226	405,581
13 SOUTHERN APPALACHIAN REGION.....	73,239,135	43,352,810	2,224,914	965,531	30,276,351	5,707,071	1,551,290	472,190	723,106	1,296,672	105,685
14 Alabama.....	62,728,860	40,662,789	2,042,304	918,371	28,327,420	5,420,177	1,456,184	472,190	684,997	1,252,773	88,373
15 Georgia, North Carolina, and Tennessee, southeastern.....	10,510,275	2,690,021	182,610	67,160	1,948,931	286,894	95,106	.....	48,109	43,899	17,312
16 MICHIGAN REGION.....	6,037,645	3,239,778	151,317	54,777	1,987,732	664,557	264,876	36,701	49,940	29,378	.....
17 EASTERN INTERIOR REGION.....	236,679,575	178,234,267	10,134,289	3,206,043	128,924,470	22,978,613	6,296,357	838,062	2,425,348	6,297,507	183,573
18 Illinois.....	166,639,312	122,779,237	6,291,010	2,262,665	87,796,323	15,345,498	4,154,744	668,142	1,704,594	4,437,294	68,942
19 Indiana.....	45,996,333	40,364,626	2,704,523	685,116	27,877,669	5,379,400	1,485,123	159,145	522,265	1,437,558	103,326
20 Kentucky, western.....	24,013,890	15,140,404	1,138,756	258,247	10,250,473	2,253,715	696,490	10,774	158,489	372,658	10,305
21 WESTERN INTERIOR REGION.....	37,702,770	41,244,661	2,124,174	643,123	29,794,026	5,045,311	1,356,859	247,063	977,791	672,396	345,898
22 Iowa.....	13,628,805	15,728,373	1,001,461	201,405	11,687,918	1,758,026	449,697	120,666	299,194	176,543	23,464
23 Kansas.....	12,285,452	13,926,077	543,890	280,698	9,949,156	1,906,068	479,320	55,520	409,674	295,463	6,353
24 Missouri.....	11,788,513	11,590,211	616,882	161,020	8,156,952	1,381,223	427,842	70,897	298,923	200,390	305,081
25 SOUTHERN INTERIOR REGION.....	24,549,491	21,253,757	1,204,510	382,640	15,114,481	2,496,321	891,406	208,819	618,565	317,681	119,324
26 Arkansas.....	3,628,278	5,141,489	284,989	99,287	3,475,019	716,615	171,596	95,649	184,207	57,478	55,651
27 Oklahoma.....	12,238,946	12,457,069	702,132	230,210	8,789,986	1,391,771	636,314	112,573	349,853	196,140	58,140
28 Texas.....	8,682,267	3,755,199	217,899	53,143	2,849,526	387,936	88,496	597	84,505	74,065	4,542
29 NORTHERN GREAT PLAINS, ROCKY MOUNTAIN AND PACIFIC COAST REGIONS.	199,733,957	76,888,573	2,972,123	1,585,355	53,987,351	10,736,963	2,199,817	1,078,660	1,448,987	2,645,071	228,716
30 Colorado.....	66,007,130	28,899,808	1,056,248	520,349	16,833,313	3,052,028	622,923	442,261	732,430	623,875	16,381
31 Montana.....	7,742,364	7,889,063	251,421	105,633	5,703,810	1,183,810	280,309	59,979	139,369	158,097	6,666
32 New Mexico.....	40,197,139	7,874,833	323,440	194,851	5,641,744	975,742	136,254	67,201	97,167	335,575	102,859
33 North Dakota.....	1,865,347	1,591,639	120,783	38,858	1,029,126	253,633	32,853	4,841	30,898	19,922	30,750
34 South Dakota.....	32,770	14,275	.....	.....	11,423	937	105	.....	1,500	310	.....
35 Utah.....	32,831,106	10,496,061	306,322	263,071	7,598,767	1,564,955	199,948	99,096	39,273	452,159	.....
36 Washington.....	15,967,334	9,468,645	313,533	171,478	6,515,983	1,376,254	547,794	94,733	166,279	247,041	60,612
37 Wyoming.....	33,876,607	15,464,050	591,551	288,487	10,545,084	2,287,971	393,798	310,515	239,261	305,211	1,232
38 California, Idaho, and Oregon.....	1,194,160	160,139	6,315	2,630	108,646	11,633	15,913	64	2,840	1,881	10,217
39 Nonproducing enterprises.....	5,617,170	1,415,640	74,761	5,235	590,824	651,231	4,548	10,751	19,476	48,889	12,538
40 Pennsylvania.....	3,191,812	899,650	23,920	1,445	133,945	156,161	196	1,264	900	40,204	11,616
41 West Virginia.....	303,410	40,166	10,250	240	14,251	10,277	.....	.....	3,500	1,648	.....
42 All other states.....	2,121,948	1,006,824	40,591	3,540	442,628	484,793	4,353	9,487	15,076	4,437	919

<sup>1</sup> Exclusive of \$433,318, the cost of coal purchased for resale by anthracite enterprises.

INDUSTRY, BY REGIONS AND STATES: 1919—Continued.

Expenditures for development (included in principal expenses).	Value of products.	Coal produced (tons, 2,000 pounds).	POWER USED.															
			Aggregate horse-power.	Prime movers.								Equipment operated by purchased power.			Electric motors run by current generated by the enterprise reporting.			
				Total horse-power.	Steam engines (not turbines).		Steam turbines.		Internal-combustion engines.		Water wheels and turbines.		Electric motors.				Other.	
					Num-ber.	Horse-power.	Num-ber.	Horse-power.	Num-ber.	Horse-power.	Num-ber.	Horse-power.	Num-ber.	Horse-power.	Horse-power.	Num-ber.		Horse-power.
337,487,973	51,510,061,707	548,596,344	3,057,729	2,167,843	14,468	1,898,788	358	246,444	1,323	22,537	9	74	23,068	829,539	347	24,849	883,814	1
26,234,369	1,510,061,707	548,596,344	3,055,195	2,166,024	14,475	1,897,003	358	246,444	1,319	22,503	9	74	23,067	829,534	347	24,845	883,064	2
6,189,900	364,084,142	88,170,508	899,783	782,090	5,298	730,141	45	50,665	72	1,284	.....	.....	1,881	117,003	.....	3,801	185,723	3
30,044,379	1,145,977,585	400,426,838	2,155,412	1,383,934	9,177	1,166,962	313	195,779	1,246	21,219	9	74	21,186	771,181	347	21,044	707,941	4
20,062,108	731,847,202	300,397,540	1,815,455	755,966	4,115	613,419	178	127,691	685	14,876	.....	.....	15,851	559,227	242	13,872	458,575	5
5,423,522	54,503,463	21,150,806	91,487	46,878	202	28,839	31	17,646	49	393	.....	.....	1,112	44,609	.....	1,272	33,386	6
182,424	8,195,667	2,997,336	12,470	8,506	90	8,166	.....	.....	14	840	.....	.....	113	3,964	.....	76	2,747	7
1,142,196	77,983,022	35,140,541	136,145	84,578	650	79,949	4	3,275	120	1,354	.....	.....	1,647	51,447	120	1,498	38,145	8
8,344,445	262,973,952	150,029,687	658,963	444,690	2,194	348,402	100	86,278	319	10,015	.....	.....	5,953	214,206	65	8,045	278,780	9
106,808	11,312,735	4,127,179	19,281	17,078	110	15,623	2	928	28	627	.....	.....	73	2,208	.....	226	8,486	10
647,496	23,763,440	9,334,796	41,630	10,016	91	9,228	1	600	19	183	.....	.....	944	31,614	.....	256	9,775	11
4,235,208	193,108,343	77,617,115	355,479	144,240	778	123,212	40	18,989	136	2,059	.....	.....	6,008	211,182	57	2,500	87,256	12
504,796	43,295,042	16,476,750	101,326	63,304	461	60,712	4	1,367	55	1,151	9	74	868	38,022	.....	710	27,385	13
464,006	45,350,441	15,411,436	97,039	59,017	415	56,802	4	1,367	30	774	9	74	868	38,022	.....	671	25,311	14
40,190	2,985,601	1,065,314	4,287	4,287	46	3,910	.....	.....	25	377	.....	.....	.....	.....	.....	39	2,074	15
143,023	3,861,874	965,909	6,884	6,189	49	6,114	1	75	.....	.....	.....	.....	10	695	.....	179	5,265	16
4,575,917	202,180,938	89,110,593	282,044	321,310	2,527	294,004	63	25,767	167	1,639	.....	.....	1,597	60,734	.....	4,635	157,642	17
2,989,024	128,767,585	60,330,600	247,142	205,777	1,609	186,926	36	17,726	88	1,126	.....	.....	1,070	41,365	.....	3,165	95,910	18
1,534,258	45,492,726	20,504,791	99,585	81,158	678	78,912	15	1,902	64	344	.....	.....	407	18,427	.....	817	41,890	19
82,025	17,926,377	8,275,122	35,317	34,375	240	28,166	12	6,140	15	69	.....	.....	30	942	.....	632	19,836	20
1,114,452	44,729,738	14,462,351	77,942	60,654	929	56,761	9	2,025	213	1,868	.....	.....	661	17,283	5	234	8,283	21
500,282	16,908,358	5,474,249	26,123	15,885	214	13,389	4	1,090	85	806	.....	.....	288	10,238	5	67	4,119	22
96,748	15,745,535	5,204,388	28,434	19,334	353	18,978	.....	.....	36	356	.....	.....	233	4,100	.....	37	1,041	23
457,422	12,077,845	3,783,714	28,385	25,435	362	24,394	5	335	92	706	.....	.....	140	2,960	.....	130	3,123	24
657,103	24,091,091	6,811,527	57,647	46,341	483	44,380	5	800	60	1,161	.....	.....	340	11,306	.....	192	6,543	25
270,610	5,292,274	1,440,498	15,027	10,159	130	10,008	.....	.....	18	156	.....	.....	130	4,868	.....	26	601	26
279,428	14,477,317	3,782,794	36,483	30,140	277	29,187	4	700	31	263	.....	.....	207	6,343	.....	142	5,159	27
107,065	4,323,100	1,588,240	6,137	6,042	76	5,190	1	100	11	782	.....	.....	3	95	.....	25	783	28
2,066,988	90,982,080	32,171,106	214,114	130,150	613	91,472	53	38,054	66	624	.....	.....	1,949	88,864	100	1,222	43,628	29
1,240,692	28,342,195	10,182,512	63,016	31,461	274	30,327	2	1,089	4	84	.....	.....	785	31,455	100	253	10,481	30
311,484	8,591,211	3,211,719	27,077	19,132	60	14,679	13	4,350	11	103	.....	.....	185	7,945	.....	145	5,289	31
120,899	9,905,541	3,185,484	18,063	13,333	15	2,745	11	10,548	2	40	.....	.....	125	4,730	.....	250	5,104	32
93,886	1,627,304	767,695	2,087	1,783	28	1,530	.....	.....	38	263	.....	.....	24	254	.....	9	100	33
.....	29,892	9,306	49	49	1	35	.....	.....	3	14	.....	.....	.....	.....	.....	.....	.....	34
224,586	12,682,035	4,522,847	24,029	9,840	40	7,755	4	2,085	.....	.....	.....	.....	276	14,189	.....	143	7,764	35
651,734	10,737,656	2,986,910	32,190	20,857	98	19,008	7	1,781	5	70	.....	.....	196	11,833	.....	315	10,619	36
318,297	18,728,461	7,212,008	47,075	33,135	88	14,850	16	18,240	2	45	.....	.....	355	13,940	.....	92	3,966	37
5,686	72,796	22,627	578	580	9	545	.....	.....	1	15	.....	.....	3	18	.....	15	355	38
1,283,604	.....	.....	2,834	1,819	13	1,788	.....	.....	4	34	.....	.....	21	715	.....	4	150	39
258,851	.....	.....	103	53	1	30	.....	.....	2	23	.....	.....	4	50	.....	.....	.....	40
35,018	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	41
969,735	.....	.....	2,431	1,766	12	1,755	.....	.....	2	11	.....	.....	17	685	.....	4	150	42



# PETROLEUM AND NATURAL GAS.

## INTRODUCTION.

**Scope of the report.**—This report presents results of the census of mines and quarries for the year 1919, relating to the petroleum and natural-gas producing industry. It includes statistics showing: The geographic distribution of the industry by producing fields and states; the progress of the industry by comparing the results of the 1919 census with those of the three preceding censuses of mines and quarries; the character of organization and the size of operating enterprises; the persons engaged in the industry; the acreage and form of tenure of petroleum and natural-gas land operated; power equipment and fuel used; statistics in detail for the petroleum and natural-gas industry for the United States as a whole, for oil fields, and for states, as far as can be shown without disclosure of individual operations.

This report does not include statistics relating to the operation of wells by governmental institutions. Returns were received from 15 such enterprises embracing one in Kansas, one in New York, five in Ohio, three in South Dakota, one in Oklahoma, and four in Pennsylvania. These enterprises operated 68 wells, engaged the services of 14 persons of whom 11 were wage earners, and reported products—natural gas—valued at \$335,900.

Statistics on the operation of plants for the extraction of gasoline from natural gas (including so-called casing-head gas) are included in the statistics in this report, for, although a considerable number of operations in 1919, including the largest natural-gas gasoline plants, were conducted as independent establishments, the greater number, comprising nearly all of the smaller plants, were conducted by natural-gas and petroleum producing companies and the data for the extraction plants were inseparably involved with those for the well operations. These statistics present all available data on natural-gas gasoline plants. They include those plants operated in conjunction with carbon-black manufacturing plants, except two establishments in Louisiana and one in West Virginia, for which satisfactory segregation of the data on gasoline extraction from data on carbon-black manufacturing could not be made.

The report contains statistics relating to unproductive operations conducted solely for exploration or development of petroleum and natural-gas properties as well as statistics relating to productive operations, but such unproductive operations as were conducted outside of or remote from the productive petroleum and natural-gas fields and by such enterprises as reported merely the drilling of test wells in unproven territory were not considered within the scope of the

census, and, in so far as it was possible to make a fair discrimination, statistics on "wildcat" operations have been excluded.

The statistics in this report are based on returns from operators. They do not include data relating to fee holders or holders of fractional interests who did not participate in producing activities. In the very common case of the sharing in production by several interests, only one of which was actively concerned in the productive operations, a single report from the operator only, made out by him as covering the operation in full, was accepted. The statistics do not contain data relating to companies whose sole business was the resale or the transportation, distributing, and marketing of petroleum and natural gas, although only through such companies is it possible to secure data on the products of a large number of small enterprises of which the production in the aggregate is very large. On this account the statistics of the Bureau of the Census on the number of wells and quantity of products will differ from the statistics presented by the United States Geological Survey, which makes use of information obtained from distributors as well as producers. It was impossible to segregate from the returns of some enterprises the data relating to the natural-gas distributing business conducted by them, and there is a duplication in the quantity and value of gas reported which is the gas produced by some operators and delivered to others who were also producers and who resold it.

**Classification of enterprises.**—Producing enterprises in the petroleum and natural-gas industry were grouped by the Bureau of the Census in the following six classes, according to the products they reported for 1919:

(1) Enterprises operating petroleum wells only. This includes enterprises producing a small amount of natural gas not marketed but used solely on producing properties as fuel for well operation and for domestic use by residents. The quantity of such gas used for well operation is included in this report and the value given for it is for the most part estimated on the basis of the value of natural gas produced and marketed by other enterprises in the same localities. Some natural-gas gasoline is also shown as product of enterprises in this class, but this was only drip gasoline or gasoline formed by natural condensation of the vapors from gaseous oil wells in well heads and connections.

(2) Enterprises operating petroleum and natural-gas wells, either product predominating.

(3) Enterprises operating petroleum and natural-gas wells, and natural-gas gasoline extraction plants, any of the products predominating.

(4) Enterprises operating natural-gas wells only. Petroleum and natural-gas gasoline are also shown as products of enterprises in this class, but these products were only negligible amounts of oil collected incident to gas production and drip gasoline or gasoline formed by natural condensation in well heads and connections.

(5) Enterprises operating natural-gas wells and natural-gas gasoline extraction plants.

(6) Enterprises operating extraction plants and not operating wells. Some of these enterprises reported as products, in addition to natural-gas gasoline, the natural gas sold after extraction of the gasoline.

A complete segregation of enterprises according to products is not possible because many wells yield both petroleum and natural gas, and because many enterprises operated both petroleum and natural-gas wells on a single property.

**Differences between the census of 1919 and preceding censuses relating to petroleum and natural gas.**—At the Fourteenth Census (1919) a general canvass of operators of petroleum and natural-gas wells was made as at the Thirteenth Census, and the resulting statistics for the petroleum and natural-gas industry, similarly based on operators' or producers' reports, are presented in similar form and in general are quite comparable. At the special census for mines and quarries for 1902 statistical information was obtained chiefly through the Standard Oil Co., which furnished statistics covering the activities of 98 per cent of the petroleum producers and 95 per cent of the petroleum wells reported for the whole of the United States and which also furnished statistics for a part of the natural-gas industry. At the Eleventh Census (1889) a direct canvass of well operators was made but the scope of the inquiry was different from that of the last two censuses and in presentation the results of the canvass were supplemented by information from other sources. The statistics for 1889 and 1902 contain few items strictly comparable with those for 1909 and 1919.

Although quite comparable in general, certain differences should be noted in the detailed presentation of the statistics for these later years. First, in the classification of enterprises the census of 1919 distinguished between producing and nonproducing enterprises and did not, like the previous census, make the further distinction within the former group between those engaged in production only and those engaged in production and the development or the drilling of new wells. Further, in the classification of enterprises on the basis of products the census of 1919 made six groups, regardless of the relative value of the products, whereas the census of 1909 made three groups, two, according as petroleum or natural gas was the only or principal product and a third, unclassified group. Second, no statistics for natural-gas gasoline were separately presented at the census of 1909 because the extraction of gasoline from natural gas did not become a

commercial industry until after 1909. Third, no classification and enumeration of wells and of operations or enterprises was made by the present census on the basis of wells producing petroleum only and natural gas only, as was done at the census of 1909; nor are statistics presented on number of wells drilled, abandoned, etc., or on the depth of wells, such information having been secured on the special schedule for compilation and presentation by the Geological Survey. Fourth, the quantity and value of petroleum and natural gas produced by reporting enterprises and used by them as fuel in operations on their producing properties was included in the report of products at both the census of 1909 and the census of 1919, but the former census did not include as one of the expenses of operation the value of such fuel as a cost for fuel, whereas at the census of 1919 instructions for preparation and editing of schedules required that cost of such fuel be reported as an expense of operation. However, at the census of 1919, when enterprises reported the purchase of natural gas for extraction of gasoline therefrom and used all or part of such gas in operating the extraction plant, the amount paid for such gas was reported as cost of material, and was not again reported as cost of fuel; but in the case of enterprises reporting gasoline extracted from gas of their own production no report was made of the value of gas used as cost of material, and only the value of the gas used as fuel was reported as cost of fuel. The reason for including in production and reporting as cost of fuel the petroleum and natural gas of their own production used by the enterprises was that generally the producers would have marketed such output if they had not themselves consumed it.

**Enumeration of wells.**—The statistics in this report include two counts of wells—the number productive December 31 and the total number operated during the census year 1919. The number of productive wells on a set date—in the census statistics December 31—is the number most suitable for statistical purposes and is the number used by the Bureau of the Census in the general statistical statements for the producing enterprises in the industry for the United States and the several states. In addition to reporting this number the returns from producers showed the number of productive wells January 1, 1919, the number of new wells completed during 1919, whether productive or dry, and the number of wells abandoned during 1919. These yielded the figures for total number of wells operated which are of especial value in combination with data on the number of wage earners employed, the number of acres operated, and number and horsepower of mechanical equipment used in the operation of the wells.

**Methods of the Bureau of the Census and the Geological Survey in reporting products.**—The statistics for the petroleum and natural-gas industry were collected in cooperation with the United States Geological Survey. For the purposes of the canvass supplemental

schedules were provided for the data required by the Geological Survey in addition to the general schedule of the Bureau of the Census. The supplemental schedules requested information in regard to the character, uses, and distribution of products and other special data for the Geological Survey; they also required the number of wells and gasoline plants and information as to the quantity of products and acreage of oil and gas lands operated which data were used by the Bureau of the Census. The gross quantities and values of the petroleum, natural gas, and natural-gas gasoline produced which were reported on the supplemental schedules, and which bear a direct relation to the number of persons engaged, expenditures, total value of products, and other data concerning the enterprises reported on the general schedule, are presented in the statistics compiled by the Bureau of the Census. The Geological Survey publishes statistics for each of these products separately.

The figure of the Bureau of the Census—350,112 thousands of barrels—is necessarily very different, 7.5 per cent short of the Geological Survey figure. Producers' returns as tabulated by the Geological Survey agree more closely with results of the Bureau of the Census tabulation as shown in the following statement:

STATE.	BUREAU OF THE CENSUS.	GEOLOGICAL SURVEY.	
	Producers' returns.	Producers' returns.	Based on transporting companies' returns.
	Expressed in thousands of barrels.		
United States.....	350,112	350,995	378,367
California.....	97,711	99,822	101,183
Illinois.....	11,622	11,639	11,990
Indiana.....	795	778	872
Kansas.....	26,626	26,126	33,048
Kentucky.....	7,926	7,816	9,278
Louisiana.....	15,834	16,017	17,188
Montana.....	90	90	90
New York.....	847	838	851
Ohio.....	6,911	6,264	7,736
Oklahoma.....	81,492	80,630	96,911
Pennsylvania.....	6,680	6,862	8,137
Texas.....	72,972	74,014	79,366
West Virginia.....	7,900	7,411	8,327
Wyoming.....	12,675	12,587	13,172
All other states.....	131	131	148

<sup>1</sup> Includes figures for Alaska.

Petroleum production as reported for 1919 by the Geological Survey was 378,367 thousands of barrels. This figure, with the exception of the part contributed by California, was compiled from reports of pipe-line and other companies which transport petroleum from producing properties and which account for approximately 98 per cent of the gross production. The remaining 2 per cent were obtained from reports by the producers and cover the quantity of petroleum consumed for fuel on the producing properties and the amount of the net changes in the producers' stocks between the beginning and end of the

year. For California the figures reported by producers to the State Mining Bureau were used. Direct returns can not be secured from a large number of small producing enterprises nor from many other enterprises which control production but do not conduct field operations. Such production is important in the aggregate and, as it is covered in returns received from transporting companies, the Geological Survey bases its complete report of petroleum production on the statements made by such companies.

The differences between the Bureau of the Census and the Geological Survey results on producers' returns are due first, to the fact that the Bureau of the Census did not in all cases revise the returns by accounting for the petroleum which was drawn from or placed in storage; and, second, that the Geological Survey figures include production by enterprises for which returns were not tabulated by the Bureau of the Census. These enterprises were almost all too small to be within the scope of the census but included some larger enterprises for which the Geological Survey secured belated returns covering production but no information in regard to other census inquiries.

The quantity of natural gas produced in the United States in 1919, as reported by the Bureau of the Census, is the sum of the quantities used and the quantities sold by the producers. The Geological Survey has tabulated for 1919 the entire production of natural gas including wastage, as far as reported by operators, on producing properties and in transmission. The Geological Survey also presents, as a measure of natural-gas output, the consumption of natural gas. The difference between the two figures, production and consumption, is the wastage reported by operators. The Bureau of the Census figure for production is practically comparable with the Geological Survey figure for consumption as shown in the following statement:

		Natural gas produced: 1919.
<i>Bureau of the Census.</i>		
Gross.....		<i>M cubic feet.</i> 961,095,000
Purchased for resale.....		233,800,000
Net.....		727,295,000
<i>Geological Survey.</i>		
Consumption.....		739,916,000

The Bureau of the Census statistics on natural-gas production, like those for petroleum production, are based entirely on producers' reports, whereas the Geological Survey data are supplemented by data from distributing companies which furnish more complete information on the output of natural gas. A further difference arises from the inclusion in the census report of production of the gas purchased for resale by some producers from others.

Comparison can not be made between the Bureau of the Census figures for production by states and the

Geological Survey figures for consumption by states, as the latter bureau reports consumption within the state without regard to the source of the production.

The apparently different figures presented by the Bureau of the Census and the Geological Survey for natural-gas gasoline are based on essentially identical data. The value of this product given by the Bureau of the Census is the value to the producers of the final products, both unblended, or raw, and blended natural-gas gasoline. The quantities given by the Bureau of the Census correspond to this value and are the quantities of raw gasoline made for sale as such or disposed of as such, plus the quantity of blended gasoline produced. The Geological Survey presents the total quantity and value of raw or unblended gasoline produced. The statistics of the Bureau of the Census present merely the value of the products (and a corresponding quantity) to the enterprises in the industry, whereas the Geological Survey figures present the entire production of natural-gas gasoline reduced to a uniform basis of measurement (unblended gasoline). The two sets of figures are as follows: Bureau of the Census, 454,089,466 gallons, valued at \$78,760,835; Geological Survey, 351,535,026 gallons, valued at \$64,196,763.

PRINCIPAL STATISTICS.

Summary for producing and nonproducing enterprises: 1919.—The principal statistics for 1919 for the petroleum and natural-gas industry in the United States are presented in Table 1, in which the statistics are given separately for two groups of enterprises: (1) Those whose operations were productive—the activities of this class were not confined to the operation of producing wells and many of these enterprises reported development work or the drilling of new wells; (2) those whose activities were not productive during the census year but were confined to the drilling of new wells and to other development work.

The total number of enterprises from which returns were received by the Bureau of the Census was 9,970, of which 9,814, or 98.4 per cent, reported production. The producing enterprises had 257,673 productive wells at the close of the census year and reported 1,115 natural-gas gasoline plants. The average number of wage earners employed by the producing enterprises was 93,205 and the total value of products reported was \$931,793,423. The products during the census year were 350,112,253 barrels of petroleum, valued at \$694,026,948; 961,095,000 M cubic feet of natural gas, valued at \$155,910,032; 454,089,466 gallons of natural-gas gasoline, valued at \$78,760,835; and, in addition, a small amount of by-product and receipts for power sold or miscellaneous services for other enterprises, valued at \$3,095,608. The enterprises reporting production during 1919 also reported ex-

penditures for development work amounting to \$230,867,499.

In the total value of products for producing enterprises there is a duplication of \$28,813,671, which represents the cost of approximately 233,800,000 M cubic feet of natural gas which was purchased by some producers from others and partly used as material for the extraction of gasoline, but for the most part was resold as natural gas and again reported by the purchaser as part of his products. Deducting this duplication the total net value of products was \$902,979,752 and the value of the natural gas \$127,096,361.

TABLE 1.—PRINCIPAL STATISTICS: 1919.

	Total.	Producing enterprises.	Nonproducing enterprises.
Number of enterprises.....	9,970	9,814	156
Number of petroleum and natural-gas wells:			
Total operated during the year.....	268,784	268,508	276
Productive Dec. 31.....	257,673	257,673	.....
Number of natural-gas gasoline plants.....	1,115	1,115	.....
Petroleum and natural-gas land operated, acres.....	12,431,519	12,171,388	260,131
Persons engaged in industry.....	125,930	125,110	820
Proprietors and firm members, total.....	14,319	14,223	96
Number performing manual labor.....	1,995	1,987	8
Salaried officers and employees.....	17,622	17,622	270
Wage earners (average number).....	93,650	93,205	454
Power used (aggregate horsepower).....	1,826,885	1,821,342	5,543
Capital.....	\$2,446,446,795	\$2,421,485,942	\$24,960,853
Principal expenses.....	\$633,124,578	\$626,468,862	\$6,655,716
Salaries.....	\$33,878,724	\$33,468,368	\$410,356
Wages.....	\$135,397,170	\$134,521,247	\$875,923
Supplies and materials.....	\$198,069,800	\$195,058,693	\$3,031,107
Cost of gas purchased as material and for resale.....	\$28,813,671	\$28,813,671	.....
Fuel.....	\$20,071,392	\$19,828,776	\$242,616
Purchased power.....	\$973,027	\$965,300	\$7,727
Royalties and rents.....	\$107,050,247	\$106,458,518	\$591,729
Taxes.....	\$38,748,388	\$38,690,630	\$57,758
Contract work.....	\$70,102,159	\$68,663,659	\$1,438,500
Expenditures for development (included in above items).....	\$236,553,420	\$230,867,499	\$5,685,921
Total value of all products.....	\$931,793,423	\$931,793,423	.....
Petroleum—			
Quantity (barrels, 42 gallons).....	350,112,253	350,112,253	.....
Value.....	\$694,026,948	\$694,026,948	.....
Natural gas—			
Quantity (M cubic feet).....	961,095,000	961,095,000	.....
Value.....	\$155,910,032	\$155,910,032	.....
Natural-gas gasoline—			
Quantity (gallons).....	454,089,466	454,089,466	.....
Value.....	\$78,760,835	\$78,760,835	.....
Other products, <sup>1</sup> value.....	\$3,095,608	\$3,095,608	.....

<sup>1</sup> Includes "drip gasoline."

<sup>2</sup> Includes a small amount of by-product and receipts for power sold or for miscellaneous services for other enterprises.

Returns were received from 156 enterprises engaged only in nonproductive operations. These enterprises represented 1.6 per cent of the total number; had invested capital amounting to \$24,960,853, or 1 per cent of the aggregate for all enterprises; employed an average of 454 wage earners during the year, or only five-tenths of 1 per cent of the total average number of wage earners for all enterprises; and reported expenditures for development work amounting to \$5,685,921, which was 2.4 per cent of expenditures for similar purposes by all enterprises and nine-tenths of 1 per cent of the aggregate of principal expenses of all enterprises. The activities of

nonproducing enterprises, as shown in Table 1, were of relatively little importance, but the operations for development reported by producing enterprises were, by the ratio of expenditures for development work to the total of principal expenses, a very considerable part—more than one-third—of the activities of producing enterprises.

Summary for producing enterprises, classified by products.—Table 2 presents a summary of the statistics for 1919 for producing enterprises in the petroleum and natural-gas industry, classified according to the products reported, and Table 3 gives the more important items with the per cent distribution according to this classification.

TABLE 2.—GENERAL SUMMARY FOR PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO THE PRODUCTS REPORTED: 1919.

	Total.	ENTERPRISES REPORTING AS PRODUCTS—					
		Petroleum.	Petroleum and natural gas.	Petroleum, natural gas, and natural-gas gasoline.	Natural gas.	Natural gas and natural-gas gasoline.	Natural-gas gasoline.
Number of enterprises.....	9,814	6,799	1,286	448	1,082	19	230
Number of petroleum and natural-gas wells:							
Total operated during the year.....	268,508	111,086	74,188	68,053	14,717	514	.....
Productive Dec. 31.....	287,678	106,926	70,901	68,589	18,758	499	.....
Number of natural-gas gasoline plants.....	1,115	.....	.....	780	.....	23	353
Petroleum and natural-gas land operated (total acres).....	12,171,388	2,826,642	3,112,818	4,847,240	2,146,861	38,123	.....
Owned.....	1,172,068	383,708	288,788	238,098	286,002	13,879	.....
Held under lease.....	10,999,320	2,142,936	2,824,030	4,115,142	1,860,859	24,243	.....
Persons engaged.....	128,110	46,718	33,579	33,723	6,684	312	4,144
Proprietors and firm members (total).....	14,223	10,375	1,631	675	1,463	21	58
Number performing manual labor.....	1,967	1,511	229	116	120	5	6
Salaried officers.....	2,392	1,159	497	286	301	11	138
Superintendents and managers.....	4,704	2,013	1,173	896	865	10	278
Technical employees.....	868	184	402	190	80	3	39
Clerks.....	9,718	3,497	2,441	2,784	742	64	240
Wage earners (average number).....	98,205	29,460	27,486	28,972	3,713	208	3,391
Wage earners, by occupation, Dec. 15.....	100,980	38,262	29,984	30,421	3,749	195	3,379
Engineers, firemen, etc.....	64,280	21,724	17,278	11,489	1,489	104	2,008
All other.....	36,700	11,538	12,706	8,704	2,260	91	1,371
Number of females included in wage earners reported above.....	118	46	17	85	.....	.....	.....
Power used (aggregate horsepower).....	1,821,342	578,514	498,071	600,119	57,261	4,817	111,280
Prime movers (horsepower, total).....	1,770,181	547,402	476,964	568,378	57,122	4,817	110,978
Steam engines—							
Number.....	28,412	8,620	5,067	8,757	217	16	135
Horsepower.....	1,532,774	1,182,786	127,086	207,746	11,499	493	3,299
Internal-combustion engines—							
Number.....	53,699	18,839	14,580	17,077	1,689	124	1,440
Horsepower.....	1,287,407	364,616	348,918	396,132	26,653	4,370	107,709
Equipment operated by purchased power (horsepower, total).....	51,161	31,412	18,087	6,241	160	.....	252
Electric motors—							
Number.....	1,841	1,178	412	284	4	.....	18
Horsepower.....	44,638	29,424	8,580	6,241	161	.....	262
Other, horsepower.....	6,523	1,988	4,527	.....	8	.....	.....
Electric motors run by current generated by the enterprise reporting:							
Number.....	1,329	82	304	851	11	45	36
Horsepower.....	28,164	517	8,211	18,647	183	355	251
Capital.....	\$2,421,485,942	\$908,885,325	\$728,830,444	\$584,457,380	\$137,263,689	\$8,763,300	\$58,207,804
Principal expenses:							
Salaries and wages.....	\$167,989,615	\$56,092,280	\$50,828,915	\$47,777,885	\$6,414,799	\$307,340	\$6,558,306
Officers.....	\$8,037,943	\$3,340,794	\$1,840,854	\$1,582,676	\$582,406	\$10,213	\$680,996
Superintendents and managers.....	\$11,468,407	\$4,464,370	\$3,181,625	\$2,501,304	\$644,233	\$26,142	\$650,533
Technical employees.....	\$1,899,022	\$415,842	\$796,133	\$513,467	\$74,643	\$4,793	\$54,144
Clerks.....	\$12,092,996	\$3,289,926	\$3,821,485	\$3,588,705	\$801,728	\$16,262	\$574,891
Wage earners.....	\$134,521,247	\$44,581,449	\$41,188,818	\$39,591,783	\$4,311,787	\$249,080	\$4,597,530
Supplies and materials.....	\$198,058,693	\$68,136,115	\$69,378,719	\$40,753,401	\$5,112,061	\$633,464	\$11,024,955
Cost of gas purchased as material and for resale.....	\$28,813,671	\$1,862	\$3,772,287	\$10,232,155	\$5,245,197	\$671,706	\$8,980,963
Fuel.....	\$19,828,776	\$8,870,542	\$6,904,584	\$3,419,972	\$419,848	\$39,302	\$174,578
Purchased power.....	\$995,300	\$557,819	\$206,567	\$187,771	\$6,457	.....	\$7,186
Royalties and rents.....	\$106,458,818	\$37,400,704	\$33,314,490	\$32,728,783	\$2,683,391	\$51,818	\$279,442
Taxes.....	\$38,690,680	\$9,561,526	\$11,288,715	\$13,721,198	\$1,686,585	\$36,146	\$2,395,487
Contract work.....	\$98,663,689	\$37,243,010	\$15,254,694	\$13,153,868	\$2,901,068	\$56,853	\$54,226
Expenditures for development (included in the above items).....	\$280,867,499	\$98,269,436	\$75,578,250	\$51,101,745	\$5,767,470	\$121,881	\$38,767
Total value of all products.....	\$981,793,423	\$276,450,083	\$272,743,038	\$297,186,256	\$38,968,019	\$2,823,587	\$44,597,440
Petroleum—							
Quantity (barrels, 42 gallons).....	350,112,253	146,249,011	111,687,539	92,174,898	805	.....	.....
Value.....	\$694,026,948	\$271,533,996	\$234,416,067	\$188,076,190	\$2,665	.....	.....
Natural gas—							
Quantity (M cubic feet).....	961,098,000	26,027,559	288,462,509	378,590,921	253,243,682	9,780,107	6,990,222
Value.....	\$155,910,032	\$2,434,155	\$37,119,129	\$75,485,253	\$38,873,713	\$1,837,488	\$680,294
Natural-gas gasoline—							
Quantity (gallons).....	454,089,466	12,585	.....	171,063,879	40,972	8,574,078	274,092,989
Value.....	\$78,780,835	\$2,770	.....	\$33,344,183	\$8,199	\$1,486,019	\$43,919,684
Other products, <sup>4</sup> value.....	\$3,985,608	\$1,479,162	\$1,208,842	\$281,630	\$108,412	\$80	\$17,483

<sup>1</sup> Includes 40 horsepower reported for 2 water wheels.

<sup>2</sup> Includes "drip gasoline."

<sup>3</sup> Drip gasoline only.

<sup>4</sup> Includes the value of a small amount of by-product and receipts for power sold or miscellaneous services for other enterprises.



TABLE 3.—CHIEF ITEMS OF PRINCIPAL STATISTICS FOR ENTERPRISES, CLASSIFIED ACCORDING TO THE PRODUCTS REPORTED, WITH PER CENT DISTRIBUTION: 1919.

	Total.	ENTERPRISES REPORTING AS PRODUCTS—											
		Petroleum.		Petroleum and natural gas.		Petroleum, natural gas, and natural-gas gasoline.		Natural gas.		Natural gas and natural-gas gasoline.		Natural-gas gasoline.	
		Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.
Number of enterprises.....	9,814	6,799	69.3	1,286	13.1	448	4.6	1,032	10.5	19	0.2	230	2.3
Number of wells productive Dec. 31.....	257,673	106,926	41.5	70,901	27.5	65,589	25.5	13,758	5.3	499	0.2	.....	.....
Petroleum and natural-gas land operated, acres.....	12,171,388	2,526,642	20.8	3,112,813	25.6	4,847,240	35.7	2,146,561	17.6	38,132	0.3	.....	.....
Wage earners (average number).....	93,206	29,490	31.6	27,436	29.4	28,972	31.1	3,713	4.0	203	0.2	3,391	3.6
Power used (aggregate horse-power).....	1,821,342	578,814	31.8	489,071	26.9	600,119	32.9	37,291	2.0	4,817	0.3	111,230	6.1
Products:													
Quantity—													
Petroleum (barrels, 42 gallons).....	350,112,253	146,249,011	41.8	111,687,539	31.9	92,174,898	26.3	805	(1)	.....	.....	.....	.....
Natural gas (M cubic feet).....	961,095,000	26,027,559	2.7	238,462,509	30.0	376,590,921	39.2	253,243,682	26.3	9,730,107	1.0	6,980,222	0.7
Natural-gas gasoline (gallons).....	454,089,466	* 12,585	.....	.....	.....	171,068,879	37.7	* 40,972	.....	8,874,078	2.0	274,092,952	60.4
Value total.....	\$631,793,423	\$378,450,083	29.6	\$272,743,038	29.3	\$297,188,256	31.9	\$38,968,019	4.2	\$2,823,587	0.3	\$44,597,440	4.8
Petroleum.....	694,028,948	271,539,996	39.1	224,415,067	32.8	188,078,190	27.1	2,695	(1)	.....	.....	.....	.....
Natural gas.....	155,910,032	2,434,155	1.6	37,119,129	23.8	75,485,253	48.4	38,873,713	24.9	1,337,488	0.9	660,294	0.4
Natural-gas gasoline.....	78,760,835	* 2,770	.....	.....	.....	33,344,183	42.3	* 8,199	.....	1,436,019	1.9	43,919,664	55.8
Other products. <sup>3</sup> .....	3,095,608	1,479,162	47.8	1,208,842	39.0	281,630	9.1	108,412	3.5	80	(1)	17,482	0.6

<sup>1</sup> Less than one-tenth of 1 per cent.

<sup>2</sup> Drip gasoline.

<sup>3</sup> Includes the value of a small amount of by-product and amounts received for power sold for miscellaneous services for other enterprises.

The tables show that by far the largest number of enterprises and of wells were in the class producing petroleum only, but this class employed only a slightly greater number of wage earners than the class producing petroleum, natural gas, and natural-gas gasoline. In value of products the class producing only petroleum was nearly equaled by the class producing petroleum and natural gas, and was outranked by the class producing petroleum, natural gas, and natural-gas gasoline. The classes producing petroleum and natural gas, and petroleum, natural gas, and natural-gas gasoline (which are alike in so far as well operations are concerned) taken together numbered 1,734 enterprises, or 17.7 per cent of the total number of enterprises, had 53 per cent of the total number of productive wells, employed 60.5 per cent of the total number of wage earners, and reported products valued at \$569,929,294, or 61.2 per cent of the value of products of all classes of enterprises. These two classes produced approximately 58 per cent of the total petroleum output and 69 per cent of the total natural-gas output. The class of enterprises producing only natural gas numbered 1,032, or 10.5 per cent of the total number of enterprises; had 13,758 productive wells, or 5.3 per cent of the total number of wells; employed only 4 per cent of the total number of wage earners; reported 26.3 per cent of the total output of natural gas and 4.2 per cent of the total value of all products. The class of enterprises producing natural-gas gasoline only, and having no gas wells, numbered 230 enterprises, or 2.3 per cent of the total number of enterprises. These operated 363 gasoline-extraction plants, which represented 32.6 per cent of the total number, showing that the majority of such plants

were operated by enterprises which also produced natural gas. These enterprises—producing natural-gas gasoline only—employed 3,391 wage earners, or 3.6 per cent of the total number of wage earners in the petroleum and natural-gas industry, and reported products valued at \$44,597,440, which was 4.8 per cent of the total value of all products. The natural-gas gasoline produced amounted to 274,092,952 gallons, valued at \$43,919,664, respectively 60.4 and 55.8 per cent of the total quantity and value of natural-gas gasoline reported.

#### GEOGRAPHIC DISTRIBUTION.

Productive fields and states.—Petroleum and natural gas were produced in 1919 in 22 states: Arkansas, California, Colorado, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Montana, New Mexico, New York, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Washington, West Virginia, and Wyoming. Seven of these were unimportant—North Dakota, where productive operations were too small to come within the scope of the census; Michigan, New Mexico, South Dakota, and Tennessee, from each of which but one productive enterprise within the scope of the census was reported; Colorado, where the once important productive fields were approaching exhaustion in 1919; and Washington, where, although gas was obtained from wells, there was no commercial production and the enterprises reported were active in development work only.

In Table 4 the important statistical items relating to the petroleum and natural-gas industry are presented by the usual geographic divisions and by states within those divisions in order that statistics on this

industry may be compared with other census statistics distributed by these geographic divisions. However, the different features of the various occurrences of

petroleum or natural gas and the consequent differences in industrial conditions affecting production are quite without relation to these geographic divisions.

TABLE 4.—STATISTICS FOR PRODUCING ENTERPRISES, BY GEOGRAPHIC DIVISIONS AND STATES: 1919.

DIVISION AND STATE.	Number of enterprises.	Number of wells productive Dec. 31.	Petroleum and natural-gas land operated (acres).	Wage earners (average number).	Power used (aggregate horsepower).	Capital.	Principal expenses.	Value of products.
UNITED STATES.....	9,814	257,673	12,171,388	93,205	1,821,342	\$2,421,455,942	\$626,468,862	\$631,793,423
<b>GEOGRAPHIC DIVISIONS:</b>								
Middle Atlantic.....	3,701	91,811	2,826,899	9,983	401,486	240,965,398	49,094,564	76,172,855
East North Central.....	1,700	54,394	1,708,883	8,278	196,319	151,847,675	42,596,978	79,351,483
West North Central.....	618	18,690	488,144	6,305	95,883	237,711,466	60,858,413	68,515,158
South Atlantic.....	751	27,863	2,782,470	12,302	338,194	186,275,466	52,901,751	99,518,304
East South Central.....	196	5,214	323,015	2,119	18,795	56,788,065	15,596,795	23,329,521
West South Central.....	2,392	56,087	3,206,384	39,636	540,649	1,117,641,994	315,990,887	423,472,781
Mountain.....	55	1,123	219,787	2,285	14,851	69,379,443	11,871,641	22,871,577
Pacific.....	403	9,197	482,320	12,344	220,089	359,851,160	77,521,507	139,018,663
All other <sup>1</sup> .....	3	34	20,126	3	99	1,005,280	32,326	43,131
<b>MIDDLE ATLANTIC:</b>								
New York.....	541	14,186	318,730	868	30,196	39,799,123	7,104,245	9,900,894
Pennsylvania.....	3,140	77,325	2,508,879	9,065	371,267	201,186,270	41,990,319	66,271,961
<b>EAST NORTH CENTRAL:</b>								
Ohio.....	1,233	35,440	1,449,229	5,123	153,220	95,749,317	27,870,823	45,483,525
Indiana.....	131	2,456	85,319	403	7,669	9,890,964	1,670,745	2,604,396
Illinois.....	236	16,498	169,025	2,752	35,430	46,207,394	13,057,410	31,263,568
<b>WEST NORTH CENTRAL:</b>								
Kansas.....	613	12,690	468,144	6,305	95,883	237,711,466	60,858,413	68,515,158
<b>SOUTH ATLANTIC:</b>								
West Virginia.....	751	27,863	2,782,470	12,302	338,194	186,275,466	52,901,751	99,518,304
<b>EAST SOUTH CENTRAL:</b>								
Kentucky.....	196	5,214	323,015	2,119	18,795	56,788,065	15,596,795	23,329,521
<b>WEST SOUTH CENTRAL:</b>								
Arkansas.....	7	124	46,621	16	617	2,089,388	448,522	621,834
Louisiana.....	133	2,479	329,342	4,841	79,249	81,682,666	25,758,635	32,616,965
Oklahoma.....	1,099	44,735	1,730,661	21,130	353,234	699,663,144	159,063,170	247,497,450
Texas.....	563	8,749	1,299,710	13,899	107,549	334,206,796	130,720,560	143,337,862
<b>MOUNTAIN:</b>								
Montana.....	5	28	4,700	38	245	897,067	159,600	258,046
Wyoming.....	39	1,064	199,542	2,167	12,838	65,620,743	11,354,513	21,959,987
Colorado and New Mexico <sup>2</sup> .....	11	71	16,455	80	1,713	2,931,633	357,528	153,594
<b>PACIFIC:</b>								
California.....	403	9,197	482,320	12,344	220,089	359,851,160	77,521,507	139,018,663
All other states <sup>1</sup> .....	3	34	20,126	3	99	1,005,280	32,326	43,131

<sup>1</sup> Includes the states of Michigan, South Dakota, and Tennessee to avoid disclosure of individual operations.

<sup>2</sup> Includes 10 enterprises in Colorado and 1 in New Mexico, combined to avoid disclosure of individual operations.

For the purpose of grouping related data and in order to present the census statistics in form comparable with other presentations for the petroleum and natural-gas industry, the following groupings of states or parts of states which correspond to the commonly accepted definition of petroleum and natural-gas fields have been adopted for the general presentation of the statistics on petroleum and natural gas:

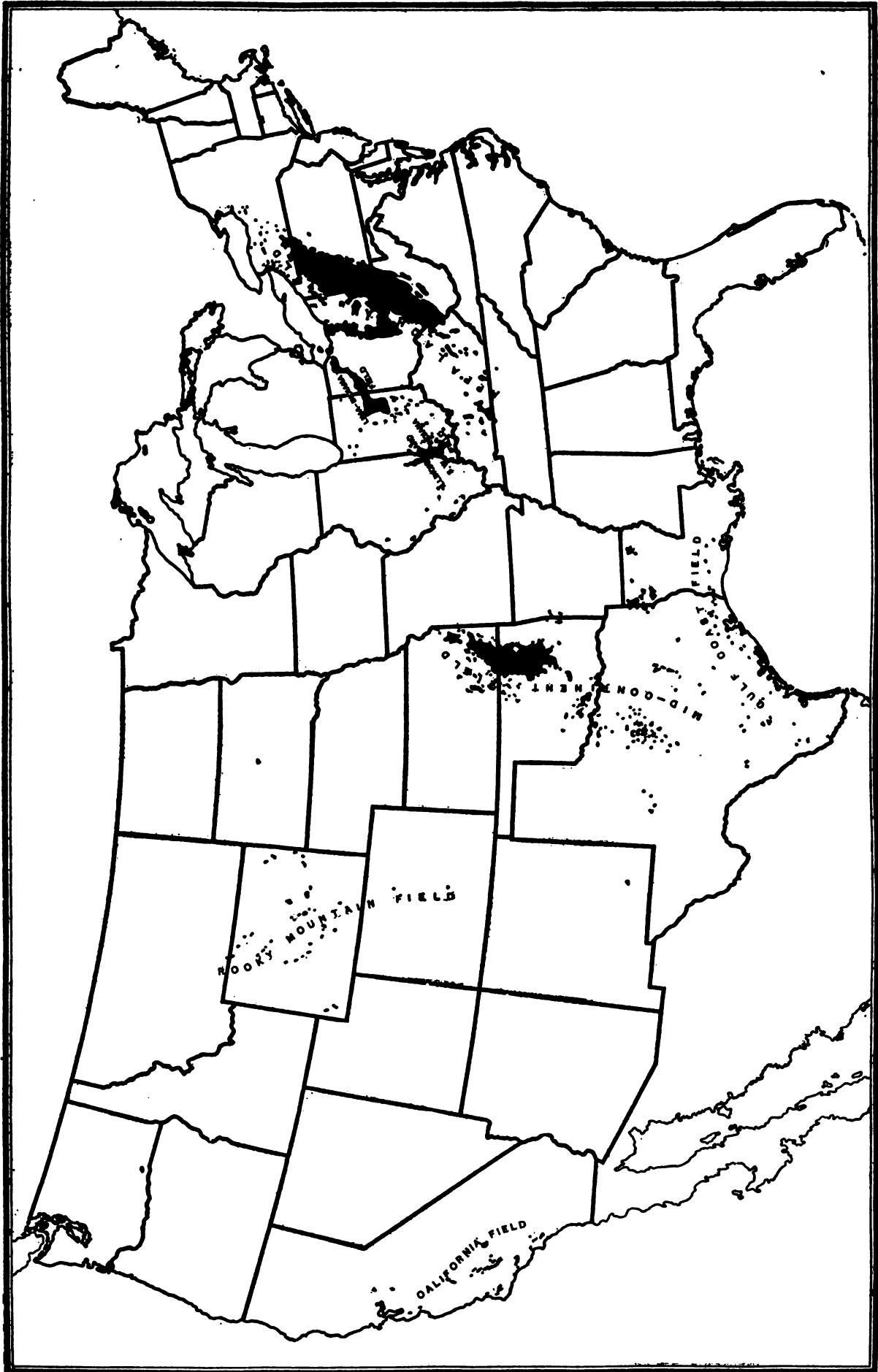
I. The Appalachian field, comprising the petroleum and natural-gas areas in the states of New York, Pennsylvania, West Virginia, Kentucky, and the following counties in eastern Ohio: Ashland, Ashtabula, Athens, Belmont, Carroll, Columbiana, Coshocton, Cuyahoga, Fairfield, Gallia, Guernsey, Harrison, Hocking, Holmes, Jackson, Jefferson, Knox, Lake, Licking, Lorain, Mahoning, Medina, Meigs, Monroe, Morgan, Muskingum, Noble, Perry, Richland, Stark, Summit, Trumbull, Tuscarawas, Vinton, Washington, and Wayne. The petroleum-producing area of Tennessee belongs to this field, but the statistics for Tennessee can not be shown separately.

II. The Lima-Indiana field, comprising counties in Ohio and Indiana as follows: In Ohio—Allen, Auglaize, Darke, Defiance, Fulton, Hancock, Hardin, Henry, Logan, Lucas, Mercer, Ottawa, Paulding, Sandusky, Seneca, Shelby, Van Wert, Williams, Wood, and Wyandot; in east central Indiana—Adams, Allen, Bartholomew, Blackford, Cass, Decatur, Delaware, Fayette, Franklin, Grant, Hamilton, Hancock, Henry, Howard, Huntington, Jay, Madison, Marion, Miami, Randolph, Rush, Shelby, Tipton, Union, Wabash, Wayne, and Wells.

III. The Illinois and Southwest Indiana field, comprising the state of Illinois and the following counties in southwest Indiana: Clay, Crawford, Daviess, Dubois, Gibson, Greene, Knox, Lawrence, Martin, Monroe, Orange, Owen, Perry, Pike, Posey, Spencer, Sullivan, Vanderburg, Vigo, and Warrick.

IV. The Mid-Continent field, comprising the states of Arkansas, Kansas, Oklahoma, and all of the oil and gas producing areas of Louisiana and Texas, except the coastal parishes and counties listed in the following definition of the Gulf Coast field.

PRINCIPAL PETROLEUM AND NATURAL-GAS FIELDS OF THE UNITED STATES.



V. The Gulf Coast field, comprising parishes in Louisiana and counties in Texas as follows: Louisiana parishes—Acadia, Assumption, Calcasieu, Cameron, Iberia, Jefferson Davis, Lafayette, Lafourche, St. Martin, St. Mary, Terre Bonne, and Vermilion; Texas counties—Brazoria, Cameron, Chambers, De Witt, Duval, Fort Bend, Galveston, Goliad, Hardin, Harris, Jefferson, Liberty, Live Oak, Matagorda, Orange, San Jacinto, San Patricio, and Starr.

VI. The Rocky Mountain field, comprising the states of Colorado, Montana, New Mexico, and Wyoming.

VII. The Pacific Coast field in California.

VIII. All other states, including Michigan, South Dakota, Tennessee, and Washington.

The location of these fields is indicated on the map on page 308, which shows the areas productive in 1919 and recent years.

Principal statistics, by fields: 1919.—Table 5 presents the principal statistics for producing and non-producing petroleum and natural-gas enterprises for 1919, by fields. The Appalachian field reported more enterprises, a greater number of wells, and larger acreage operated than any other field. The 142,947

productive wells in this field represented 55.5 per cent of the total number in the United States, and the acreage operated by producing enterprises (7,120,485) was 58.5 per cent of the total for the United States. But on the basis of average number of wage earners employed and value of products the Appalachian field was outranked by the Mid-Continent field, in which 42,389 wage earners, or 45.5 per cent of the total average number in producing enterprises, were employed, and from which products to the value of \$464,045,161, or approximately 50 per cent of the total value of all products, were reported. The Mid-Continent field ranked second in number of wells, the Lima-Indiana field third, and the Illinois and Southwest Indiana field fourth. The Mid-Continent field ranked second in acreage of petroleum and natural-gas land operated, the Pacific Coast field third, and the Lima-Indiana field fourth. The Appalachian field ranked second in the total value of all products, the Pacific Coast field third, and the Illinois and Southwest Indiana field fourth. The Appalachian field was second in the average number of wage earners employed, the Pacific Coast field third, and the Gulf Coast field fourth.

TABLE 5.—PRINCIPAL STATISTICS, BY FIELDS: 1919.

FIELD.	Number of enterprises.	NUMBER OF WELLS.		Number of gas-line plants.	Wage earners (average number).	Power used (aggregate horsepower).	PETROLEUM AND NATURAL-GAS LAND OPERATED (ACRES).			Capital.	Principal expenses.	Value of products.
		Total operated during year.	Productive Dec. 31.				Total.	Owned.	Held under lease.			
United States.....	9,970	268,784	257,673	1,115	93,659	1,826,885	12,431,519	1,175,713	11,255,806	\$2,446,446,795	\$633,124,578	\$931,793,423
Producing enterprises.....	9,814	268,598	257,673	1,115	93,205	1,821,342	12,171,938	1,172,068	10,999,870	2,421,455,942	626,468,962	931,793,423
Nonproducing enterprises.....	156	276	.....	.....	454	5,543	260,181	3,645	256,436	24,990,853	6,655,716	.....
<b>Appalachian field:</b>												
Producing enterprises.....	5,549	147,696	142,947	615	28,303	865,257	7,120,485	572,165	6,548,320	570,005,698	142,036,351	239,244,405
Nonproducing enterprises.....	18	67	.....	.....	26	249	65,515	470	65,045	640,100	340,238	.....
<b>Lima-Indiana field:</b>												
Producing enterprises.....	538	18,906	18,186	.....	1,320	45,771	273,712	26,902	246,810	14,308,978	4,124,819	6,218,317
<b>Illinois and Southwest Indiana field:</b>												
Producing enterprises.....	261	17,868	17,349	72	3,009	38,743	190,480	2,629	187,851	51,581,928	14,002,918	32,909,441
<b>Mid-Continent field:</b>												
Producing enterprises.....	2,871	70,664	66,545	365	42,389	587,805	3,647,388	235,678	3,411,710	1,296,260,821	352,844,864	464,045,161
Nonproducing enterprises.....	102	155	.....	.....	226	3,215	171,184	296	170,948	19,342,498	4,335,913	.....
<b>Gulf Coast field:</b>												
Producing enterprises.....	134	2,569	2,232	.....	3,552	48,727	217,090	17,359	199,731	59,062,639	24,004,436	27,942,728
Nonproducing enterprises.....	7	6	.....	.....	31	192	11,586	505	11,081	309,660	251,035	.....
<b>Rocky Mountain field:</b>												
Producing enterprises.....	55	1,398	1,183	5	2,285	14,851	219,787	16,830	202,957	69,379,443	11,871,641	23,371,577
Nonproducing enterprises.....	11	21	.....	.....	67	629	6,076	.....	6,076	2,427,130	757,106	.....
<b>Pacific Coast field:</b>												
Producing enterprises.....	408	9,378	9,197	58	12,344	220,069	482,320	300,429	181,891	359,851,160	77,521,507	139,018,668
Nonproducing enterprises.....	13	15	.....	.....	91	1,023	4,969	2,433	2,436	2,044,447	744,063	.....
<b>All other states:</b>												
Producing enterprises.....	3	44	34	.....	3	99	20,126	76	20,050	1,005,230	32,326	43,131
Nonproducing enterprises.....	5	12	.....	.....	14	235	901	1	900	197,018	174,341	.....

Table 6 presents the quantity and value of products in detail by fields and states in each field. In the production of petroleum the Mid-Continent field ranked first with 49.1 per cent of the total output of the United States, the Pacific Coast field second with 27.9 per cent of the total, the Appalachian field third, and the Gulf Coast field fourth. In natural-gas production the Appalachian field ranked first with 57.2 per cent of the total output for the United States, the

Mid-Continent field second with 35 per cent of the total, the Pacific Coast field third, and the Rocky Mountain field fourth. In the production of natural-gas gasoline the Mid-Continent field ranked first with 65.7 per cent of the production for the United States, the Appalachian field second with 21.2 per cent of the total, the Pacific Coast field third, and the Rocky Mountain field fourth.

TABLE 6.—PRODUCTS IN DETAIL, BY FIELDS AND STATES: 1919.

FIELD.	Number of enterprises.	Number of wells productive Dec. 31.	Number of gasoline plants.	Total value of products.	PETROLEUM.		NATURAL GAS.		NATURAL-GAS GASOLINE.		Value of other products. <sup>1</sup>
					Quantity (barrels, 42 gallons).	Value.	Quantity (M cubic feet).	Value.	Quantity (gallons).	Value.	
United States.....	9,814	257,673	1,115	\$931,793,423	350,112,253	\$694,026,948	961,095,000	\$155,910,032	454,069,466	\$78,780,835	\$3,095,606
<b>Appalachian field.....</b>	<b>5,549</b>	<b>142,947</b>	<b>615</b>	<b>239,244,406</b>	<b>28,270,079</b>	<b>103,436,170</b>	<b>549,557,285</b>	<b>113,393,144</b>	<b>96,264,348</b>	<b>21,799,949</b>	<b>615,142</b>
Kentucky.....	196	5,214	7	23,329,521	7,926,199	20,990,629	9,152,172	1,468,455	3,627,941	828,840	41,597
New York <sup>2</sup> .....	561	14,186	6	9,900,894	846,860	3,480,075	19,114,349	6,142,385	1,435,996	377,774	660
Ohio, eastern.....	901	18,859	53	40,223,725	4,916,347	17,395,082	90,507,882	20,797,429	8,987,950	2,002,971	28,243
Pennsylvania <sup>3</sup> .....	3,140	77,325	319	66,271,961	6,680,350	27,615,663	140,687,062	32,879,813	26,677,961	5,456,535	319,950
West Virginia.....	751	27,363	230	99,518,304	7,900,323	33,954,721	290,095,800	52,105,062	56,534,510	13,233,829	224,692
<b>Lima-Indiana field.....</b>	<b>538</b>	<b>18,186</b>	<b>.....</b>	<b>6,218,317</b>	<b>2,175,370</b>	<b>5,478,202</b>	<b>2,047,837</b>	<b>692,833</b>	<b>.....</b>	<b>.....</b>	<b>47,282</b>
Indiana, east central.....	106	1,605	.....	968,517	181,129	469,979	1,427,583	453,774	.....	.....	664
Ohio, northwest.....	432	16,581	.....	5,259,900	1,994,241	5,008,123	620,249	204,059	.....	.....	46,618
<b>Illinois and Southwest Indiana field.....</b>	<b>261</b>	<b>17,849</b>	<b>72</b>	<b>32,909,441</b>	<b>12,235,939</b>	<b>31,126,318</b>	<b>2,499,669</b>	<b>309,842</b>	<b>8,045,998</b>	<b>1,395,111</b>	<b>78,170</b>
Illinois.....	236	16,498	72	31,263,563	11,621,992	29,536,676	1,743,790	868,738	8,044,198	1,394,754	73,345
Indiana, southwest.....	25	851	.....	1,645,878	613,947	1,589,642	755,879	51,064	1,800	357	4,825
<b>Mid-Continent field<sup>4</sup>.....</b>	<b>2,871</b>	<b>66,545</b>	<b>365</b>	<b>464,045,161</b>	<b>171,801,255</b>	<b>378,448,161</b>	<b>336,717,898</b>	<b>36,174,788</b>	<b>298,400,262</b>	<b>47,923,232</b>	<b>1,498,950</b>
Arkansas.....	7	124	.....	521,524	.....	.....	7,376,218	611,237	.....	.....	10,647
Kansas.....	613	12,060	11	68,615,158	26,526,169	60,577,413	40,183,277	6,812,632	5,482,098	1,061,662	68,451
Louisiana, northwest.....	114	2,332	20	29,617,306	13,623,370	23,175,689	67,521,407	4,772,203	9,392,110	1,587,420	81,894
Oklahoma <sup>5</sup> .....	1,699	44,735	311	247,497,450	81,492,433	181,448,329	200,835,108	21,813,906	273,078,962	43,180,601	1,064,614
Texas, northern and central <sup>6</sup> .....	438	6,064	23	117,793,513	49,959,283	113,246,730	20,761,628	2,164,740	10,446,432	2,098,599	288,444
<b>Gulf Coast field<sup>7</sup>.....</b>	<b>184</b>	<b>2,222</b>	<b>.....</b>	<b>27,942,728</b>	<b>25,022,977</b>	<b>27,647,502</b>	<b>5,170,360</b>	<b>277,975</b>	<b>.....</b>	<b>.....</b>	<b>17,251</b>
Louisiana, southern.....	19	147	.....	2,938,879	2,010,916	2,297,788	704,042	96,953	.....	.....	4,138
Texas <sup>8</sup> .....	115	2,085	.....	25,548,349	23,012,361	25,349,714	4,466,208	181,022	.....	.....	13,113
<b>Rocky Mountain field.....</b>	<b>55</b>	<b>1,183</b>	<b>5</b>	<b>22,371,577</b>	<b>12,880,428</b>	<b>20,423,525</b>	<b>8,014,160</b>	<b>547,646</b>	<b>8,342,173</b>	<b>1,391,530</b>	<b>8,876</b>
Colorado and New Mexico <sup>9</sup> .....	11	71	.....	153,594	153,594	153,152	6,650	442	.....	.....	.....
Montana.....	5	28	.....	258,046	90,193	171,598	858,728	86,443	.....	.....	.....
Wyoming.....	39	1,084	5	21,959,937	12,674,670	20,068,775	7,148,782	460,756	8,342,173	1,391,530	8,876
<b>Pacific Coast field.....</b>	<b>403</b>	<b>9,197</b>	<b>58</b>	<b>139,018,663</b>	<b>97,711,350</b>	<b>127,429,664</b>	<b>57,015,822</b>	<b>4,508,099</b>	<b>43,036,745</b>	<b>6,250,963</b>	<b>829,337</b>
California.....	403	9,197	58	139,018,663	97,711,350	127,429,664	57,015,822	4,508,099	43,036,745	6,250,963	829,337
All other states <sup>4</sup> .....	3	34	.....	43,131	14,855	37,406	72,079	5,725	.....	.....	.....

<sup>1</sup> Includes the value of a small amount of by-product and receipts for power sold or miscellaneous services for other enterprises.

<sup>2</sup> Statistics for Pennsylvania include those for small operations in New York, inseparably combined in the report of an enterprise which conducted the major part of its operations in Pennsylvania.

<sup>3</sup> Statistics for the Mid-Continent field include those for 2 small operations in Texas in the Gulf Coast field, inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas.

<sup>4</sup> Statistics for Oklahoma include those for small operations in Texas, inseparably combined in the report of an enterprise which conducted the major part of its operations in Oklahoma.

<sup>5</sup> Statistics for northern and central Texas include those for 2 small operations in Texas in the Gulf Coast field, inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas; statistics for northern and central Texas exclude the small operations of an enterprise reporting the major part of its operations in Oklahoma.

<sup>6</sup> Statistics for Texas in the Gulf Coast field exclude those for 2 small operations inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas.

<sup>7</sup> Colorado and New Mexico combined to avoid disclosure of individual operations.

<sup>8</sup> Includes Michigan, South Dakota, and Tennessee.

**Rank of fields and states, by value of products, 1919.**—Table 7 shows the fields and states in the petroleum and natural-gas industry, ranked according to gross and net value of products, and gives the per cent distribution.

The net value is obtained by eliminating the value of natural gas duplicated in the returns from producers who purchased it from other producers for use as material or for resale.

TABLE 7.—FIELDS AND STATES, RANKED ACCORDING TO THE GROSS AND NET VALUE OF PRODUCTS: 1919.

FIELD AND STATE.	Rank.	Total value (gross) of products.	Gas purchased as material and for resale.	Net value of products.	PER CENT DISTRIBUTION.		FIELD AND STATE.	Rank.	Total value (gross) of products.	Gas purchased as material and for resale.	Net value of products.	PER CENT DISTRIBUTION.	
					Total value.	Net value.						Total value.	Net value.
United States.....		\$931,793,423	\$28,813,671	\$902,979,752	100.0	100.0	<i>By states—Continued.</i>						
<i>By fields.</i>							California.....	3	\$139,018,663	\$510,073	\$138,508,590	14.9	15.3
Mid-Continent field.....	1	464,045,161	11,308,655	452,736,506	49.8	50.1	West Virginia.....	4	99,518,304	5,371,497	93,646,807	10.7	10.4
Appalachian field.....	2	239,244,406	16,774,073	222,470,332	25.7	24.6	Kansas.....	5	68,615,158	287,725	68,227,433	7.3	7.6
Pacific Coast field.....	3	139,018,663	510,073	138,508,590	14.9	15.3	Pennsylvania.....	6	66,271,961	5,077,115	61,194,846	7.1	6.8
Illinois and Southwest Indiana field.....	4	32,909,441	91,659	32,817,782	3.5	3.6	Ohio.....	7	45,488,525	3,092,567	42,395,958	4.9	4.7
Gulf Coast field.....	5	27,942,728	4,088	27,938,640	3.0	3.1	Louisiana.....	8	32,016,086	740,522	31,275,563	3.4	3.5
Rocky Mountain field.....	6	22,371,577	74,281	22,297,296	2.4	2.5	Illinois.....	9	31,263,563	91,659	31,171,904	3.4	3.5
Lima-Indiana field.....	7	6,218,317	50,842	6,167,475	0.7	0.7	Kentucky.....	10	23,329,521	41,104	23,288,417	2.5	2.6
All other <sup>1</sup> .....		43,131	.....	43,131	(*)	(*)	Wyoming.....	11	21,959,937	74,281	21,885,656	2.4	2.4
<i>By states.</i>							New York.....	12	9,900,894	2,692,086	7,208,808	1.1	0.8
Oklahoma.....	1	247,497,450	9,758,073	237,739,377	26.6	26.3	Indiana.....	13	2,604,395	50,546	2,553,849	0.3	0.3
Texas.....	2	143,337,362	360,637	142,976,725	15.4	15.8	Arkansas.....	14	621,324	165,796	455,528	0.1	0.1
							Montana.....	15	258,046	.....	258,046	(*)	(*)
							Colorado and New Mexico.....		153,594	.....	153,594	(*)	(*)
							All other states <sup>1</sup> .....		43,131	.....	43,131	(*)	(*)

<sup>1</sup> Includes Michigan, South Dakota, and Tennessee.

<sup>2</sup> Less than one-tenth of 1 per cent.

PROGRESS OF THE INDUSTRY.

Comparative summary for producing enterprises: 1919, 1909, 1902, and 1889.—Table 8 presents, for the United States as a whole, the principal statistics reported at the Fourteenth Census relating to the petroleum and natural-gas industry, and the available comparable statistics reported at the three preceding censuses of mines and quarries, and gives the percentages of increase and decrease. The table shows marked increase at each census as compared with the preceding census. The large increases in the value of products in 1919 as compared with 1909

and in the chief items of expense are for the most part due to general price increases during the decade and the extraordinary increase in taxes shown is explained by the impost of Federal income taxes and special state taxes since 1909. The large increase in cost of fuel and power is not real as the amounts shown for this item are not entirely comparable, as explained in the introduction to this report. No explanation is available for the apparent decrease in the number of wage earners in 1902 as compared with 1889. Other decreases shown are insignificant.

TABLE 8.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919, 1909, 1902, AND 1889.

	1919	1909	1902	1889	PER CENT OF INCREASE. <sup>1</sup>		
					1909-1919	1909-1909	1889-1902
Number of enterprises.....	9,814	7,942	(*)	(*)	23.6		
Number of petroleum and natural-gas wells:							
Total operated during the year.....	268,506	172,191	134,477	(*)	55.9	23.0	
Productive Dec. 31.....	257,673	166,320	123,200		54.9	35.0	229.3
Number of natural-gas gasoline plants.....	1,115						
Petroleum and natural-gas land operated (acres).....	12,171,388	12,694,838	(*)	(*)	-4.1		
Persons engaged.....	125,110	59,085			111.7		
Proprietors and firm members, total.....	14,223	16,213	(*)	(*)	-12.3		
Number performing manual labor.....	1,987	2,155	(*)	(*)	-7.8		
Salaried employees.....	17,632	6,128	4,956	584	188.5	23.6	748.6
Wage earners (average number).....	93,205	26,744	22,230	23,639	153.7	65.3	-22.4
Power used (aggregate horsepower).....	1,821,342	1,221,909	1,014,184	(*)	49.0	20.5	
Capital.....	\$2,421,485,942	\$683,268,497	(*)	(*)	254.4		
Principal expenses:							
Salaries.....	\$33,468,368	\$7,241,831	\$4,797,105	\$453,559	362.2	51.0	957.7
Wages.....	\$124,521,247	\$27,091,050	\$16,178,640	\$9,529,730	396.5	67.5	64.6
Supplies and materials.....	\$195,055,693	\$39,947,013	\$24,336,767	\$22,690,432	383.3		7.5
Cost of gas purchased as material and for resale.....	\$28,813,671	\$9,885,877	(*)	(*)	191.4		
Fuel and purchased power.....	\$20,794,076	\$1,444,595	(*)	(*)	1,339.4		
Royalties and rents.....	\$108,458,518	\$21,282,320	\$11,463,786	(*)	400.2	85.7	
Taxes.....	\$38,690,630	\$2,378,986	(*)	(*)	1,401.4		
Contract.....	\$63,663,659	\$16,736,510	\$17,415,632	(*)	310.3	-3.9	
Total value of all products.....	\$931,793,423	\$185,416,684	\$102,265,602	\$48,060,439	402.5	81.3	112.8
Petroleum—							
Quantity (barrels, 42 gallons).....	350,112,253	171,559,394	89,275,302	35,163,513	104.1	92.2	153.9
Value.....	\$694,026,943	\$117,696,529	\$71,397,739	\$26,963,340	489.7	64.3	164.8
Natural gas—							
Quantity (M cubic feet).....	961,095,000	559,800,460	204,244,373	552,150,000	71.7	174.1	
Value.....	\$155,910,082	\$67,605,397	\$30,867,863	\$21,097,099	130.6	119.0	46.3
Natural-gas gasoline—							
Quantity (gallons).....	454,089,466						
Value.....	\$78,780,835						
Other products, value.....	\$3,085,808	\$114,758					

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where figures are not comparable.  
<sup>2</sup> See "Thirteenth Census of the United States, Mines and Quarries, Vol. XI," p. 344.  
<sup>3</sup> Not reported.  
<sup>4</sup> Comparable statistics not available.  
<sup>5</sup> Includes cost of fuel.  
<sup>6</sup> See "Thirteenth Census of the United States, Mines and Quarries, Vol. XI," p. 265.  
<sup>7</sup> Estimated consumption of natural gas, see "Eleventh Census of the United States, 1890, Mineral Industries," p. 518.  
<sup>8</sup> Estimated value of natural gas on basis of other fuels displaced. "Eleventh Census of the United States, 1890, Mineral Industries," p. 521.

Comparison of value of products: 1919, 1909, and 1902.—Table 9 shows the total value of all products of the petroleum and natural-gas industry, by states, for 1919, 1909, and 1902, and also shows the per cent of increase or decrease. The comparison can not be made by fields because the data for 1902 are not so

segregated; states are, however, assembled in groups conforming as nearly as possible to the fields. The notable features of this table are the decreases in Indiana, which continued from 1902 to 1919, and the very large increases in Kentucky and in the states of the Mid-Continent and Gulf Coast fields.

TABLE 9.—COMPARISON OF VALUE OF PRODUCTS, BY STATES: 1919.

STATE.	VALUE OF PRODUCTS.						
	1919	1909	1902	Increase. <sup>1</sup>		Per cent of increase. <sup>1</sup>	
				1909-1919	1902-1909	1909-1919	1902-1909
United States.....	\$931,793,423	\$185,416,684	\$102,265,602	\$746,376,739	\$83,151,082	402.5	81.3
<b>Appalachian states:</b>							
New York.....	9,900,894	2,668,996	1,877,323	7,231,898	791,673	271.0	42.2
Pennsylvania.....	66,271,961	39,197,475	29,618,276	27,074,486	9,579,199	69.1	32.3
Ohio.....	45,483,625	29,620,969	28,112,817	15,862,566	6,508,142	58.6	28.2
West Virginia.....	99,518,304	28,188,087	22,430,498	71,330,217	5,757,589	253.1	25.7
Kentucky.....	23,329,621	892,281	538,448	22,437,240	353,833	2,514.6	65.7
Indiana.....	2,604,395	3,224,619	13,607,966	-620,224	-10,383,347	-19.2	-76.3
Illinois.....	31,263,563	18,895,815	( <sup>2</sup> )	12,367,748	18,895,815	65.5	.....
<b>Mid-Continent and Gulf states:</b>							
Kansas.....	68,515,158	6,681,780	1,116,895	61,833,378	5,564,885	925.4	498.2
Oklahoma.....	247,497,450	17,685,092	( <sup>2</sup> )	229,812,358	17,685,092	1,299.5	.....
Arkansas.....	621,534	( <sup>2</sup> )	( <sup>2</sup> )	621,534	.....	.....	.....
Texas.....	143,337,362	6,214,538	4,189,684	137,122,524	2,024,854	2,206.5	48.3
Louisiana.....	32,016,085	2,177,986	( <sup>2</sup> )	29,838,099	2,177,986	1,370.0	.....
<b>Rocky Mountain states:</b>							
Colorado and New Mexico.....	4,153,594	5,313,168	5,486,583	-159,574	-173,415	.....	-35.6
Montana.....	258,046	( <sup>2</sup> )	( <sup>2</sup> )	258,046	.....	.....	.....
Wyoming.....	21,959,937	( <sup>2</sup> )	( <sup>2</sup> )	21,959,937	.....	.....	.....
California.....	139,018,663	29,310,335	4,994,265	109,708,328	24,316,070	374.3	486.9
All other states <sup>4</sup> .....	43,131	345,553	292,847	-302,422	52,706	.....	.....

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where figures are not comparable.

<sup>2</sup> Included in "All other states."

<sup>3</sup> Not reported.

<sup>4</sup> For 1919, Colorado and New Mexico were combined to avoid disclosure of individual operations.

<sup>5</sup> Colorado only.

<sup>6</sup> All other states include, for 1919, Michigan, South Dakota, and Tennessee; for 1909, Arkansas, Michigan, Missouri, North Dakota, South Dakota, Tennessee, and Wyoming; for 1902, Illinois, Indian Territory, Louisiana, Missouri, Oklahoma, Tennessee, Michigan, and Wyoming.

Population and production of petroleum and natural gas.—Table 10 shows the quantities of petroleum and natural gas produced in the years 1869, 1879, 1889, 1902, 1909, and 1919, as far as figures are available, and the population for the corresponding census years.

TABLE 10.—COMPARISON OF INCREASE IN POPULATION AND IN PRODUCTION OF PETROLEUM AND NATURAL GAS, BY CENSUS PERIODS: 1869-1919.

YEAR.	Population. <sup>1</sup>	Per cent of increase over preceding census.	PETROLEUM.			NATURAL GAS.		
			Quantity (barrels, 42 gallons).	Per cent of increase over preceding census.	Bbls. per capita.	Quantity (M cubic feet).	Per cent of increase over preceding census.	M cu. ft. per capita.
1869.....	33,553,371	.....	4,215,000	.....	0.1	( <sup>2</sup> )	.....	.....
1879.....	50,155,753	30.1	19,914,146	372.5	0.4	( <sup>2</sup> )	.....	.....
1889.....	62,947,714	25.5	35,163,513	76.6	0.6	( <sup>2</sup> )	.....	.....
1902.....	79,365,896	26.1	89,275,302	153.9	1.1	204,244,373	.....	2.6
1909.....	91,972,266	17.0	171,559,394	92.2	1.9	559,800,490	174.1	6.1
1919.....	105,710,620	14.9	350,112,253	104.1	3.3	961,095,000	71.7	9.1

<sup>1</sup> Population is for the year following that covered by the statistics for petroleum and natural gas.

<sup>2</sup> Not reported.

<sup>3</sup> Estimated population, July 1, 1902.

<sup>4</sup> Thirteenth Census of the United States: Vol. XI, Mines and Quarries, p. 265.

It compares the growth of population with increase of output of petroleum and natural gas at each census period. This table shows very large increase in production of petroleum and natural gas as compared

with increase in population. In 1869 one-tenth of a barrel of petroleum was produced per capita, whereas in 1919 the production was 3.3 barrels per capita, and whereas in 1902 the production of natural gas was 2.6 M cubic feet per capita, it had increased to 9.1 M cubic feet per capita by 1919.

CHARACTER OF ORGANIZATION.

The character of the organizations operating producing enterprises in the petroleum and natural-gas industry are shown, for the United States as a whole and by states, in Table 11. Only three-eighths of the petroleum and natural-gas enterprises in the United States were operated by corporations, but these corporations reported 89.5 per cent of the total average number of wage earners employed, and 88.9 per cent of the total value of products. In general, the corporations conducted the larger and more important enterprises. In most states firms or partnerships were more numerous as operators of petroleum and natural-gas enterprises than individuals, but both as a rule operated relatively small enterprises, employed few wage earners, and produced only a small part of the value of products. They were most numerous and of relatively greater importance in size of operations in the oldest producing regions; that is, in New York, Pennsylvania, and Ohio.

TABLE 11.—CHARACTER OF ORGANIZATION, PRODUCING ENTERPRISES: 1919.

STATE AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Wage earners (average number).	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.			STATE AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Wage earners (average number).	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Average per enterprise.	Enterprises.	Wage earners.	Value of products.				Total.	Average per enterprise.	Enterprises.	Wage earners.	Value of products.
United States.....	9,814	93,205	\$231,798,423	\$24,945	100.0	100.0	100.0	Montana.....	5	38	\$258,046	\$51,609	100.0	100.0	100.0
Corporation.....	3,633	83,393	828,591,404	224,977	37.5	88.5	88.9	Corporation.....	5	38	258,046	51,609	100.0	100.0	100.0
Individual.....	2,064	3,242	28,760,586	13,924	21.0	3.5	3.1	New York.....	561	868	9,900,894	17,649	100.0	100.0	100.0
Firm.....	3,286	5,013	51,771,499	15,712	33.6	5.4	5.6	Corporation.....	61	558	7,179,452	117,696	10.9	64.3	72.5
Other.....	772	1,554	22,666,934	29,955	7.9	1.7	2.4	Individual.....	155	77	663,741	4,283	27.6	8.9	6.7
Arkansas.....	7	16	621,834	88,833	100.0	100.0	100.0	Firm.....	217	153	1,334,724	6,151	38.7	17.6	13.5
Corporation.....	7	16	621,834	88,833	100.0	100.0	100.0	Other.....	128	80	722,978	5,648	22.8	9.2	7.3
California.....	408	12,344	139,018,663	344,959	100.0	100.0	100.0	Ohio.....	1,333	5,123	45,483,525	34,121	100.0	100.0	100.0
Corporation.....	337	12,008	135,009,248	400,621	83.6	97.3	97.1	Corporation.....	357	4,027	36,960,394	103,532	26.8	78.6	81.3
Individual.....	40	196	2,239,725	55,993	9.9	1.6	1.6	Individual.....	296	261	1,791,832	6,053	22.2	5.1	3.9
Firm.....	21	108	1,615,981	78,949	5.2	0.9	1.2	Firm.....	600	698	5,661,294	9,435	45.0	13.6	12.4
Other.....	5	32	153,759	30,752	1.2	0.3	0.1	Other.....	80	137	1,069,465	13,368	6.0	2.7	2.3
Colorado and New Mexico.....	11	80	153,594	13,963	100.0	100.0	100.0	Oklahoma.....	1,699	21,180	247,497,450	145,672	100.0	100.0	100.0
Corporation.....	5	78	135,726	27,145	45.5	97.5	88.4	Corporation.....	1,197	19,313	223,366,976	136,606	70.5	91.2	90.2
Individual <sup>1</sup> .....	6	2	17,868	2,978	54.5	2.5	11.6	Individual.....	147	963	10,088,632	68,436	8.7	4.6	4.1
Illinois.....	236	2,752	31,263,563	132,473	100.0	100.0	100.0	Firm.....	270	629	8,776,194	32,504	15.9	3.0	3.5
Corporation.....	74	2,493	28,348,300	383,085	31.4	90.6	90.7	Other.....	85	255	5,296,668	62,902	5.0	1.2	2.1
Individual.....	37	42	426,988	11,540	15.7	1.5	1.4	Pennsylvania.....	3,140	9,065	66,271,961	21,106	100.0	100.0	100.0
Firm.....	104	172	1,958,052	18,827	44.1	6.2	6.3	Corporation.....	295	6,220	44,016,627	149,200	9.4	68.6	66.4
Other.....	21	45	630,223	25,249	8.9	1.6	1.7	Individual.....	1,102	1,094	7,847,063	7,121	35.1	12.1	11.9
Indiana.....	131	403	2,604,395	19,881	100.0	100.0	100.0	Firm.....	1,435	1,425	10,685,470	7,196	47.3	15.7	16.1
Corporation.....	71	334	1,841,627	25,938	54.2	82.9	70.7	Other.....	258	326	3,722,781	14,429	8.2	3.6	5.6
Individual.....	31	22	114,152	3,682	23.7	5.5	4.4	Texas.....	553	13,599	143,337,362	259,200	100.0	100.0	100.0
Firm.....	23	19	192,973	8,390	17.6	4.7	7.4	Corporation.....	284	12,055	120,465,905	494,176	51.4	88.6	84.0
Other.....	6	28	455,643	75,941	4.6	6.9	17.5	Individual.....	37	160	1,883,584	50,908	6.7	1.2	1.3
Kansas.....	613	6,305	68,515,158	111,770	100.0	100.0	100.0	Firm.....	100	866	11,586,622	115,896	18.1	6.4	8.1
Corporation.....	334	5,736	61,600,996	184,434	54.5	91.0	89.9	Other.....	132	518	9,401,251	71,222	23.9	3.8	6.6
Individual.....	91	100	1,669,900	18,351	14.8	2.5	2.4	West Virginia.....	751	12,302	99,518,304	132,514	100.0	100.0	100.0
Firm.....	155	348	4,568,914	27,990	26.9	5.5	6.7	Corporation.....	339	11,581	93,942,563	277,117	45.1	94.1	94.4
Other.....	23	61	630,248	29,263	3.8	1.0	1.0	Individual.....	108	197	1,762,791	16,332	14.4	1.6	1.8
Kentucky.....	196	2,119	23,329,521	119,628	100.0	100.0	100.0	Firm.....	278	473	3,348,193	13,044	37.0	3.8	3.4
Corporation.....	109	2,018	21,507,275	127,262	86.2	95.2	92.2	Other.....	26	51	464,757	17,875	3.5	0.4	0.5
Individual.....	7	8	81,831	11,690	3.6	0.4	0.3	Wyoming.....	39	2,167	21,959,937	563,075	100.0	100.0	100.0
Firm.....	15	75	1,905,475	107,032	7.7	3.5	6.9	Corporation.....	39	2,167	21,959,937	563,075	100.0	100.0	100.0
Other.....	5	18	184,940	26,988	2.6	0.8	0.6								
Louisiana.....	133	4,841	32,016,085	240,722	100.0	100.0	100.0								
Corporation.....	109	4,754	31,375,958	287,853	82.0	98.2	98.0								
Individual.....	7	40	202,459	28,923	5.3	0.8	0.6								
Firm <sup>2</sup> .....	17	47	437,668	25,745	12.8	1.0	1.4								

<sup>1</sup> Includes 2 firms.

<sup>2</sup> Includes 1 "Other" form of organization.

SCALE OF OPERATION.

Size of enterprises according to value of products.—Table 12 shows the producing enterprises, for the United States as a whole and for fields and states, classified according to the value of products per enterprise, and gives the value of products and per cent distribution for each class. The larger enterprises, which were those producing more than \$1,000,000 worth of product each, constituted only 1.4 per cent of the total number of enterprises but produced 59.7 per cent of the total value of products. Enterprises producing less than \$20,000 worth of product each constituted 72.8 per cent and those producing less than \$100,000 worth of product each, 90.1 per cent of the total number of enterprises. These smaller enterprises constituted more than 95 per cent of the total number in the oldest fields—the Appa-

lachian and Lima-Indiana fields—in which they were 96 and 99.3 per cent, respectively, of the full count of enterprises. In these two fields combined there were 5,863 such small enterprises and these were about two-thirds of the total number of small enterprises in the whole industry. The largest enterprises—those reporting value of products of more than \$5,000,000 each—are shown in all fields except the Lima-Indiana and in the states of California, Illinois, Kansas, Louisiana, Ohio, Oklahoma, Pennsylvania, Texas, West Virginia, and Wyoming. The size of these enterprises as shown in this table does not, however, accurately indicate the size of the individual operation because many of the large operators made consolidated returns which covered a number of operations in several localities within a single state.



TABLE 12.—SIZE OF PRODUCING ENTERPRISES, BY VALUE OF PRODUCTS: 1919.

FIELD, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.		FIELD, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.	
	Number.	Per cent distribution.	Amount.	Per cent distribution.		Number.	Per cent distribution.	Amount.	Per cent distribution.
<b>UNITED STATES.....</b>	<b>9,814</b>	<b>100.0</b>	<b>\$931,793,423</b>	<b>100.0</b>	<b>MID-CONTINENT FIELD.....</b>	<b>2,871</b>	<b>100.0</b>	<b>\$464,045,161</b>	<b>100.0</b>
Less than \$5,000.....	4,348	44.3	9,531,235	1.0	Less than \$5,000.....	695	24.2	1,686,435	0.4
\$5,000 to \$20,000.....	2,797	28.5	28,919,564	3.1	\$5,000 to \$20,000.....	863	30.1	9,350,313	2.0
\$20,000 to \$100,000.....	1,696	17.3	75,785,417	8.1	\$20,000 to \$100,000.....	775	27.0	35,668,010	7.7
\$100,000 to \$500,000.....	684	7.0	150,748,376	16.2	\$100,000 to \$500,000.....	385	13.4	87,671,796	18.9
\$500,000 to \$1,000,000.....	156	1.6	109,951,280	11.8	\$500,000 to \$1,000,000.....	22	2.9	56,747,456	12.2
\$1,000,000 to \$5,000,000.....	96	1.0	204,187,367	21.9	\$1,000,000 to \$5,000,000.....	57	2.0	123,892,115	26.7
\$5,000,000 and over.....	37	0.4	352,670,184	37.8	\$5,000,000 and over.....	14	0.5	149,020,036	32.1
<b>APPALACHIAN FIELD.....</b>	<b>5,549</b>	<b>100.0</b>	<b>239,244,405</b>	<b>100.0</b>	<b>Arkansas.....</b>	<b>7</b>	<b>100.0</b>	<b>621,834</b>	<b>100.0</b>
Less than \$5,000.....	3,120	56.2	6,657,024	2.8	Less than \$100,000 <sup>1</sup> .....	3	42.9	70,729	11.4
\$5,000 to \$20,000.....	1,586	28.6	15,832,969	6.6	\$100,000 to \$500,000.....	4	57.1	561,106	88.6
\$20,000 to \$100,000.....	623	11.2	25,748,748	10.8	<b>Kansas.....</b>	<b>613</b>	<b>100.0</b>	<b>68,515,158</b>	<b>100.0</b>
\$100,000 to \$500,000.....	161	2.9	33,491,746	14.0	Less than \$5,000.....	196	32.0	450,124	0.7
\$500,000 to \$1,000,000.....	30	0.5	21,682,901	9.1	\$5,000 to \$20,000.....	210	34.3	2,137,226	3.1
\$1,000,000 to \$5,000,000.....	20	0.4	43,640,916	18.2	\$20,000 to \$100,000.....	143	23.3	6,808,068	9.2
\$5,000,000 and over.....	9	0.2	92,190,111	38.5	\$100,000 to \$500,000.....	47	7.7	10,183,991	14.9
<b>Kentucky.....</b>	<b>196</b>	<b>100.0</b>	<b>23,329,521</b>	<b>100.0</b>	\$500,000 to \$1,000,000.....	11	1.8	7,519,095	11.0
Less than \$5,000.....	61	31.1	162,368	0.7	\$1,000,000 and over <sup>2</sup> .....	6	1.0	41,916,664	61.2
\$5,000 to \$20,000.....	51	26.0	521,487	2.2	<b>Louisiana, northwest.....</b>	<b>114</b>	<b>100.0</b>	<b>29,617,206</b>	<b>100.0</b>
\$20,000 to \$100,000.....	44	22.4	2,198,572	9.4	Less than \$5,000.....	18	15.8	41,917	0.1
\$100,000 to \$500,000.....	27	13.8	5,426,394	23.3	\$5,000 to \$20,000.....	31	27.2	844,182	1.2
\$500,000 to \$1,000,000.....	5	2.6	8,873,447	16.6	\$20,000 to \$100,000.....	28	24.6	1,268,978	4.3
\$1,000,000 to \$5,000,000.....	8	4.1	11,147,253	47.8	\$100,000 to \$500,000.....	29	25.4	7,208,959	24.3
<b>New York.....</b>	<b>561</b>	<b>100.0</b>	<b>9,900,894</b>	<b>100.0</b>	\$500,000 to \$1,000,000.....	4	3.5	2,724,161	9.2
Less than \$5,000.....	363	64.7	734,486	7.4	\$1,000,000 and over <sup>2</sup> .....	4	3.5	18,039,009	60.9
\$5,000 to \$20,000.....	154	27.5	1,467,722	14.8	<b>Oklahoma.....</b>	<b>1,699</b>	<b>100.0</b>	<b>247,497,450</b>	<b>100.0</b>
\$20,000 to \$100,000.....	35	6.2	1,229,300	12.4	Less than \$5,000.....	399	23.5	952,696	0.4
\$100,000 and over <sup>3</sup> .....	9	1.6	6,469,386	65.3	\$5,000 to \$20,000.....	513	30.2	6,661,229	2.3
<b>Ohio, eastern.....</b>	<b>901</b>	<b>100.0</b>	<b>40,223,725</b>	<b>100.0</b>	\$20,000 to \$100,000.....	468	27.3	21,050,800	8.5
Less than \$5,000.....	436	48.4	956,570	2.4	\$100,000 to \$500,000.....	230	13.5	52,454,544	21.2
\$5,000 to \$20,000.....	288	32.0	3,012,381	7.5	\$500,000 to \$1,000,000.....	50	2.9	35,135,864	14.2
\$20,000 to \$100,000.....	136	15.1	5,906,979	14.7	\$1,000,000 to \$5,000,000.....	37	2.2	76,571,285	30.9
\$100,000 to \$500,000.....	82	9.1	6,895,043	17.1	\$5,000,000 and over.....	7	0.4	56,671,532	22.5
\$500,000 and over <sup>3</sup> .....	9	1.0	23,450,752	58.3	<b>Texas, northern and central.....</b>	<b>438</b>	<b>100.0</b>	<b>117,798,513</b>	<b>100.0</b>
<b>Pennsylvania.....</b>	<b>3,140</b>	<b>100.0</b>	<b>66,271,961</b>	<b>100.0</b>	Less than \$5,000.....	82	18.7	241,698	0.2
Less than \$5,000.....	1,835	61.6	4,103,204	6.2	\$5,000 to \$20,000.....	107	24.4	1,192,463	1.0
\$5,000 to \$20,000.....	872	27.8	8,534,238	12.9	\$20,000 to \$100,000.....	140	32.0	7,008,058	5.9
\$20,000 to \$100,000.....	267	8.5	10,339,074	15.6	\$100,000 to \$500,000.....	75	17.1	17,273,197	14.7
\$100,000 to \$500,000.....	51	1.6	10,616,782	16.0	\$500,000 to \$1,000,000.....	17	3.9	11,868,836	9.7
\$500,000 to \$1,000,000.....	7	0.2	5,150,347	7.8	\$1,000,000 to \$5,000,000.....	12	2.7	25,681,985	21.8
\$1,000,000 and over <sup>3</sup> .....	8	0.3	27,528,316	41.5	\$5,000,000 and over.....	5	1.1	56,031,726	46.7
<b>West Virginia.....</b>	<b>751</b>	<b>100.0</b>	<b>99,518,304</b>	<b>100.0</b>	<b>GULF COAST FIELD.....</b>	<b>134</b>	<b>100.0</b>	<b>27,942,728</b>	<b>100.0</b>
Less than \$5,000.....	325	43.3	700,396	0.7	Less than \$5,000.....	31	23.1	72,731	0.3
\$5,000 to \$20,000.....	221	29.4	2,267,131	2.3	\$5,000 to \$20,000.....	37	27.6	421,720	1.5
\$20,000 to \$100,000.....	141	18.8	6,072,823	6.1	\$20,000 to \$100,000.....	43	32.1	2,049,234	7.3
\$100,000 to \$500,000.....	44	5.9	9,113,716	9.2	\$100,000 to \$500,000.....	14	10.5	3,331,863	11.9
\$500,000 to \$1,000,000.....	11	1.5	7,353,227	7.4	\$500,000 to \$1,000,000.....	3	2.2	2,143,698	7.7
\$1,000,000 to \$5,000,000.....	4	0.5	9,633,404	9.7	\$1,000,000 to \$5,000,000.....	3	2.2	5,301,976	19.7
\$5,000,000 and over.....	5	0.7	64,347,607	64.7	\$5,000,000 and over.....	3	2.2	11,622,006	41.6
<b>LIMA-INDIANA FIELD.....</b>	<b>538</b>	<b>100.0</b>	<b>6,218,317</b>	<b>100.0</b>	<b>Louisiana, southern.....</b>	<b>19</b>	<b>100.0</b>	<b>2,898,879</b>	<b>100.0</b>
Less than \$5,000.....	368	68.4	757,762	12.2	Less than \$20,000 <sup>4</sup> .....	7	36.8	35,680	1.5
\$5,000 to \$20,000.....	137	25.5	1,276,618	20.5	\$20,000 to \$100,000.....	8	42.1	871,284	15.5
\$20,000 to \$100,000.....	29	5.4	1,106,990	17.8	\$100,000 and over <sup>4</sup> .....	4	21.1	1,991,935	68.0
\$100,000 and over <sup>4</sup> .....	4	0.7	3,076,947	49.5	<b>Texas.....</b>	<b>115</b>	<b>100.0</b>	<b>25,543,849</b>	<b>100.0</b>
<b>Indiana, east central.....</b>	<b>106</b>	<b>100.0</b>	<b>958,517</b>	<b>100.0</b>	Less than \$5,000.....	26	22.6	61,533	0.2
Less than \$5,000.....	65	61.3	121,261	12.7	\$5,000 to \$20,000.....	35	30.4	397,258	1.6
\$5,000 to \$20,000.....	33	31.1	319,376	33.3	\$20,000 to \$100,000.....	35	30.4	1,077,950	4.6
\$20,000 and over <sup>5</sup> .....	8	7.5	517,880	54.0	\$100,000 to \$500,000.....	11	9.6	2,528,405	9.9
<b>Ohio, northwest.....</b>	<b>432</b>	<b>100.0</b>	<b>5,259,800</b>	<b>100.0</b>	\$500,000 to \$1,000,000.....	3	2.6	2,143,698	8.4
Less than \$5,000.....	303	70.1	636,501	12.1	\$1,000,000 and over <sup>5</sup> .....	5	4.3	18,785,006	73.3
\$5,000 to \$20,000.....	104	24.1	957,242	18.2	<b>ROCKY MOUNTAIN FIELD.....</b>	<b>55</b>	<b>100.0</b>	<b>22,371,577</b>	<b>100.0</b>
\$20,000 to \$100,000.....	22	5.1	689,751	13.1	Less than \$5,000.....	18	32.7	87,841	0.2
\$100,000 and over <sup>5</sup> .....	3	0.7	2,976,306	56.6	\$5,000 to \$20,000.....	7	12.7	77,756	0.3
<b>ILLINOIS AND SOUTHWEST INDIANA FIELD.....</b>	<b>261</b>	<b>100.0</b>	<b>32,909,441</b>	<b>100.0</b>	\$20,000 to \$100,000.....	16	29.1	798,519	3.6
Less than \$5,000.....	76	29.1	204,545	0.6	\$100,000 to \$500,000.....	5	9.1	881,324	3.9
\$5,000 to \$20,000.....	94	36.0	1,054,842	3.2	\$500,000 to \$1,000,000.....	4	7.3	2,576,389	11.5
\$20,000 to \$100,000.....	62	23.8	2,710,656	8.2	\$1,000,000 and over <sup>5</sup> .....	5	9.1	17,999,748	80.5
\$100,000 to \$500,000.....	21	8.0	4,394,330	13.3	<b>Colorado and New Mexico<sup>10</sup>.....</b>	<b>11</b>	<b>100.0</b>	<b>153,594</b>	<b>100.0</b>
\$500,000 and over <sup>5</sup> .....	8	3.1	24,575,068	74.7	Less than \$5,000.....	7	63.6	15,593	10.2
<b>Illinois.....</b>	<b>236</b>	<b>100.0</b>	<b>31,283,563</b>	<b>100.0</b>	\$5,000 and over <sup>6</sup> .....	4	36.4	138,001	89.8
Less than \$5,000.....	67	28.4	178,686	0.6	<b>Montana.....</b>	<b>5</b>	<b>100.0</b>	<b>258,046</b>	<b>100.0</b>
\$5,000 to \$20,000.....	85	37.3	964,502	3.1	\$20,000 to \$100,000.....	5	100.0	258,046	100.0
\$20,000 to \$100,000.....	56	23.7	2,391,390	7.6	<b>Wyoming.....</b>	<b>39</b>	<b>100.0</b>	<b>21,959,987</b>	<b>100.0</b>
\$100,000 to \$500,000.....	18	7.6	3,753,253	11.9	Less than \$5,000.....	11	28.2	22,248	0.1
\$500,000 and over <sup>5</sup> .....	7	3.0	28,985,702	76.8	\$5,000 to \$20,000.....	4	10.3	53,909	0.2
<b>Indiana, southwest.....</b>	<b>25</b>	<b>100.0</b>	<b>1,645,878</b>	<b>100.0</b>	\$20,000 to \$100,000.....	11	28.2	540,473	2.5
Less than \$5,000.....	9	36.0	25,859	1.6	\$100,000 to \$500,000.....	4	10.3	767,170	3.5
\$5,000 to \$20,000.....	6	24.0	90,340	5.5	\$500,000 to \$1,000,000.....	4	10.3	2,576,389	11.7
\$20,000 to \$100,000.....	6	24.0	319,266	19.4	\$1,000,000 and over <sup>5</sup> .....	5	12.8	17,999,748	82.0
\$100,000 and over <sup>7</sup> .....	4	16.0	1,210,413	73.5					

<sup>1</sup> Includes the groups "\$500,000 to \$1,000,000" and "\$1,000,000 to \$5,000,000."  
<sup>2</sup> Includes the groups "\$1,000,000 to \$5,000,000" and "\$5,000,000 and over."  
<sup>3</sup> Includes the group "\$5,000,000 and over."  
<sup>4</sup> Includes the group "\$1,000,000 to \$5,000,000."  
<sup>5</sup> Includes the group "\$100,000 to \$500,000."

<sup>6</sup> Includes the group "\$1,000,000 to \$5,000,000."  
<sup>7</sup> Includes the group "\$800,000 to \$1,000,000."  
<sup>8</sup> Includes the groups "\$5,000 to \$20,000" and "\$20,000 to \$100,000."  
<sup>9</sup> Includes the groups "Less than \$5,000" and "\$5,000 to \$20,000."  
<sup>10</sup> Colorado and New Mexico combined to avoid disclosure.

TABLE 12.—SIZE OF PRODUCING ENTERPRISES, BY VALUE OF PRODUCTS: 1919—Continued.

FIELD, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.		FIELD, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.	
	Number.	Per cent distribution.	Amount.	Per cent distribution.		Number.	Per cent distribution.	Amount.	Per cent distribution.
PACIFIC COAST FIELD.....	408	100.0	\$139,018,663	100.0	PACIFIC COAST FIELD—Contd. California—Continued.				
Less than \$5,000.....	38	9.4	113,317	0.1	\$5,000 to \$20,000.....	73	18.1	\$896,356	0.6
\$5,000 to \$20,000.....	73	18.1	896,356	0.6	\$20,000 to \$100,000.....	147	36.5	7,661,709	5.5
\$20,000 to \$100,000.....	147	36.5	7,661,709	5.5	\$100,000 to \$500,000.....	95	23.6	20,439,847	14.7
\$100,000 to \$500,000.....	95	23.6	20,439,847	14.7	\$500,000 to \$1,000,000.....	31	7.7	22,170,668	15.9
\$500,000 to \$1,000,000.....	31	7.7	22,170,668	15.9	\$1,000,000 to \$5,000,000.....	11	2.7	19,901,087	14.3
\$1,000,000 to \$5,000,000.....	11	2.7	19,901,087	14.3	\$5,000,000 and over.....	8	2.0	67,835,679	48.8
\$5,000,000 and over.....	8	2.0	67,835,679	48.8	ALL OTHER STATES <sup>11</sup> .....	3	100.0	43,131	100.0
California.....	408	100.0	139,018,663	100.0	Less than \$100,000 <sup>12</sup> .....	3	100.0	43,131	100.0
Less than \$5,000.....	38	9.4	113,317	0.1					

<sup>11</sup> Includes Michigan, South Dakota, and Tennessee.

<sup>12</sup> Includes the groups "Less than \$5,000" and "\$20,000 to \$100,000."

Size of enterprises according to average number of wage earners.—Table 13 on page 316 presents for the United States as a whole and for fields and states a classification of producing enterprises according to the average number of wage earners per enterprise, and shows the number of wage earners in each class and the per cent distribution by classes. A preponderance of small enterprises, as measured by the average number of wage earners, is characteristic of the petroleum and natural-gas industry and is shown by the table for each field and state. In the United States as a whole, 3,292 enterprises, or more than one-third of the total number, did not regularly employ wage earners; of these 1,397 employed none at any time and 1,895 employed only occasional or part-time help. About one-half of the enterprises—4,925—employed from 1 to 5 wage earners. Enterprises employing more than 5 wage earners numbered 1,597 and constituted one-sixth of the total number, and 134 enterprises, having more than 100 wage earners each, constituted 1.3 per cent of the total number but employed 57.8 per cent of the total average number of wage earners. The size of the actual individual operation, however, was not as large as indicated by the number of wage earners employed by the larger enterprises

because, as noted in the preceding section, most of these larger enterprises made consolidated returns for several operations within a state.

Size of enterprises according to acreage of land operated.—Table 14 on page 317 presents the producing enterprises in the petroleum and natural-gas industry, for the United States and for fields and states, classified according to the number of acres of petroleum and natural-gas land operated, and gives the acres of land operated, together with the per cent distribution for the items by classes. For the United States as a whole, the largest number of enterprises were the class operating from "1 to 50 acres," and the next largest classes were those operating from "50 to 100 acres" and from "100 to 200 acres." More than two-thirds of the enterprises were in these three classes, but the acreage operated by them was a relatively small part of the total acreage. With reference to the classes operating the largest holdings it should be noted, just as for the preceding paragraphs and tables, that some enterprises made consolidated returns for several operations within a state and therefore the number of acres per enterprise as shown in this table for these classes is greater than the actual number of acres pertaining to the individual operations.



PETROLEUM AND NATURAL GAS.

TABLE 14.—SIZE OF PRODUCING ENTERPRISES, BY NUMBER OF ACRES OF PETROLEUM AND NATURAL-GAS LAND OPERATED: 1919.

FIELD AND STATE.	Total.		ENTERPRISES OPERATING—											
			1 to 50 acres.				50 to 100 acres.				100 to 200 acres.			
	Number of enterprises.	Number of acres.	Number of enterprises.	Per cent of total.	Number of acres.	Per cent of total.	Number of enterprises.	Per cent of total.	Number of acres.	Per cent of total.	Number of enterprises.	Per cent of total.	Number of acres.	Per cent of total.
United States.....	19,584	12,171,388	2,680	28.1	66,824	0.5	1,904	19.9	150,157	1.2	1,867	19.4	277,604	2.3
<i>Appalachian field.</i>	5,507	7,120,485	1,691	30.7	42,453	0.6	1,187	21.6	98,637	1.3	1,047	19.0	164,307	2.2
Kentucky.....	195	322,015	28	14.4	658	0.2	38	19.5	3,053	0.9	28	14.4	4,072	1.3
New York.....	557	818,780	227	40.8	6,768	2.1	118	21.2	8,929	2.8	105	18.9	14,985	4.7
Ohio, eastern.....	895	1,280,301	190	21.2	3,786	0.3	165	18.4	12,685	1.0	192	21.5	29,251	2.4
Pennsylvania.....	3,121	2,508,879	1,085	34.1	26,854	1.1	745	28.9	59,333	2.4	808	19.0	85,712	3.5
West Virginia.....	730	2,732,470	181	24.5	4,387	0.2	121	16.4	9,637	0.4	129	17.5	19,337	0.7
<i>Lima-Indiana field.</i>	533	273,712	89	16.5	2,216	0.8	129	24.0	10,130	3.7	131	24.3	19,895	7.3
Indiana, east central.....	108	63,864	28	26.4	435	0.7	14	13.2	1,120	1.3	5	4.7	790	1.2
Ohio, northwest.....	422	209,848	61	14.1	1,781	0.8	115	26.6	9,010	4.3	126	29.2	19,127	9.1
<i>Illinois and Southwest Indiana field.</i>	255	190,490	61	23.9	1,694	0.9	68	26.7	5,405	2.8	47	18.4	6,540	3.4
Illinois.....	230	169,025	58	25.2	1,612	1.0	62	27.0	4,945	2.9	44	19.1	6,085	3.6
Indiana, southwest.....	25	21,465	3	12.0	82	0.4	6	24.0	490	2.1	3	12.0	455	2.1
<i>Mid-Continent field.</i>	2,709	3,647,388	595	22.0	15,294	0.4	451	16.6	35,806	1.0	558	20.6	86,027	2.4
Arkansas.....	7	46,621	1	14.3	1,551	0.3	85	14.0	6,792	1.5	137	22.6	21,574	4.6
Kansas.....	607	468,144	52	8.6	1,054	0.4	8	7.4	630	0.2	12	11.1	1,727	0.7
Louisiana, northwest.....	108	260,986	40	37.0	1,064	0.4	8	7.4	630	0.2	12	11.1	1,727	0.7
Oklahoma.....	1,557	1,730,661	276	17.7	9,016	0.5	312	20.0	24,771	1.4	372	23.9	57,107	3.3
Texas, northern and central.....	490	1,140,976	227	52.8	3,673	0.3	46	10.7	3,613	0.3	37	8.6	5,619	0.5
<i>Gulf Coast field.</i>	134	217,080	90	67.2	1,096	0.5	12	9.0	829	0.4	6	4.5	842	0.4
Louisiana, southern.....	19	65,856	11	57.9	81	0.1	2	10.5	134	0.2	1	20.0	160	0.5
Texas.....	115	148,794	79	68.7	1,015	0.7	10	8.7	695	0.5	6	5.2	842	0.6
<i>Rocky Mountain field.</i>	53	219,787	2	3.8	11	(*)	3	5.7	242	0.1	8	15.1	1,273	0.6
Colorado and New Mexico.....	11	15,485	2	18.2	11	0.1	1	9.1	198	0.1	1	9.1	198	1.2
Montana.....	5	4,760	1	20.0	1	10.0	1	20.0	1	10.0	1	20.0	100	3.4
Wyoming.....	37	199,542	1	2.7	1	0.5	1	2.7	1	0.5	6	16.2	920	0.5
<i>Pacific Coast field.</i>	385	482,320	160	41.6	4,050	0.8	54	14.0	4,108	0.9	59	15.3	8,663	1.8
California.....	385	482,320	160	41.6	4,050	0.8	54	14.0	4,108	0.9	59	15.3	8,663	1.8
All other states.....	3	20,126	1	33.3	10	(*)	1	33.3	10	33.3	1	33.3	116	0.6

FIELD AND STATE.	ENTERPRISES OPERATING—											
	200 to 500 acres.				500 to 1,000 acres.				1,000 acres and over.			
	Number of enterprises.	Per cent of total.	Number of acres.	Per cent of total.	Number of enterprises.	Per cent of total.	Number of acres.	Per cent of total.	Number of enterprises.	Per cent of total.	Number of acres.	Per cent of total.
United States.....	1,557	16.2	507,197	4.2	666	6.9	485,695	4.0	911	9.5	10,683,821	87.8
<i>Appalachian field.</i>	858	15.6	278,334	2.9	307	5.6	229,402	3.2	417	7.6	6,321,832	58.8
Kentucky.....	46	23.6	14,888	4.6	10	5.1	7,411	2.3	45	23.1	292,933	90.7
New York.....	66	11.8	21,494	6.7	19	3.4	13,633	4.3	22	3.9	262,971	79.4
Ohio, eastern.....	189	21.1	62,904	5.1	74	8.2	51,007	4.1	85	9.5	1,079,768	87.1
Pennsylvania.....	429	13.7	138,261	5.5	137	4.4	109,999	4.4	182	4.9	2,085,720	83.2
West Virginia.....	128	17.3	41,297	1.5	67	9.1	47,352	1.7	113	15.3	2,610,460	95.5
<i>Lima-Indiana field.</i>	116	21.6	37,745	13.8	47	8.7	33,872	12.4	26	4.8	169,853	62.1
Indiana, east central.....	25	23.6	8,329	13.0	20	13.9	15,196	23.8	14	13.2	38,015	59.5
Ohio, northwest.....	91	21.1	29,416	14.0	27	6.2	18,676	8.9	12	2.8	131,838	62.8
<i>Illinois and Southwest Indiana field.</i>	39	15.3	13,543	7.1	15	5.9	10,138	5.3	25	9.8	153,160	80.4
Illinois.....	34	14.8	11,896	7.0	14	6.1	9,283	5.5	18	7.8	135,204	80.0
Indiana, southwest.....	5	20.0	1,647	7.7	1	4.0	855	4.0	7	28.0	17,956	88.7
<i>Mid-Continent field.</i>	485	17.9	158,739	4.4	261	9.6	135,416	5.1	359	13.3	3,166,106	95.8
Arkansas.....	7	14.3	1,551	0.3	1	14.3	600	1.3	6	85.7	46,021	98.7
Kansas.....	157	25.9	52,398	11.2	87	14.3	62,294	13.3	89	14.7	322,535	69.1
Louisiana, northwest.....	18	16.7	6,194	2.4	7	6.5	5,413	2.1	23	21.3	245,968	94.2
Oklahoma.....	267	17.1	88,311	5.0	145	9.3	102,667	5.9	185	11.9	1,460,789	83.8
Texas, northern and central.....	48	10.0	13,836	1.2	21	4.9	14,442	1.3	56	13.0	1,099,793	96.4
<i>Gulf Coast field.</i>	6	4.5	1,516	0.7	11	8.2	8,445	3.9	9	6.7	204,382	94.1
Louisiana, southern.....	1	5.3	274	0.4	2	10.5	1,490	2.2	3	15.8	66,387	97.1
Texas.....	5	4.3	1,242	0.8	9	7.8	6,955	4.7	6	5.2	137,975	92.8
<i>Rocky Mountain field.</i>	8	15.1	2,774	1.3	8	15.1	5,713	2.6	24	45.3	209,774	95.4
Colorado and New Mexico.....	2	18.2	800	5.2	3	27.3	1,997	12.9	3	27.3	12,484	80.6
Montana.....	1	20.0	400	8.4	1	10.0	400	20.0	1	10.0	4,200	88.2
Wyoming.....	5	13.5	1,574	0.8	5	13.5	3,716	1.9	18	43.6	198,090	96.8
<i>Pacific Coast field.</i>	45	11.7	14,046	2.9	17	4.4	12,709	2.6	50	13.0	438,714	91.0
California.....	45	11.7	14,046	2.9	17	4.4	12,709	2.6	50	13.0	438,714	91.0
All other states.....	1	33.3	20,000	0.6	1	33.3	20,000	0.6	1	33.3	20,000	98.4

\* Exclusive of 230 enterprises engaged only in the extraction of gasoline from natural gas.

† Less than one-tenth of 1 per cent.

PERSONS ENGAGED IN THE INDUSTRY.

Persons according to class and sex.—Table 15 shows, by classes, the number of persons engaged in producing and nonproducing enterprises in the petroleum and natural-gas industry for the United States as a whole and for producing fields, and gives the number of males and females in each class, and the per cent distribution of persons by classes. Females constituted only slightly more than 4 per cent of the total of all classes of persons engaged and nearly three-fourths of them were employed as clerks or other subordinate salaried employees. The other females were chiefly proprietors and firm members. A small but appreciable number (123 on the representative day) were also reported as wage earners, probably being for the most part employed as cooks by drilling outfits. The number of proprietors and officials, including salaried employees of higher grades, was 17.8 per cent of the total number of persons in all petroleum and natural-gas enterprises in the United States as a whole, but ranged from 5.5 in the Rocky Mountain field to 29.1 per cent in the Appalachian field and 44.2 per cent in the Lima-Indiana field. The ratio of wage earners to other persons was notably low

as compared with the ratio in mining and quarrying, and, correspondingly, the proportions in the various grades of salaried employees was high.

Table 15 shows that wage earners constituted 74.4 per cent of the total number of persons in all petroleum and natural-gas enterprises in the United States. In the producing enterprises the wage earners formed 74.5 per cent of the total number of persons and this proportion ranged from 53.6 in the Lima-Indiana field and 64.5 per cent in the Appalachian field to 91.1 per cent in the Rocky Mountain field. In the non-producing enterprises wage earners constituted 55.4 per cent of the total number of persons and this proportion ranged from 25.2 per cent in the Appalachian field to 79.8 per cent in the Pacific Coast field. Wage earners were relatively fewer in the older fields where the corporate form of operating organizations was relatively least important and where new developments and drilling activities were far subordinate to the operation of old enterprises. It is chiefly in the development stages and the early period of production that labor is required in the petroleum and natural-gas industry. Later stages of operation under some conditions require practically no wage earners.

TABLE 15.—PERSONS ENGAGED, PRODUCING AND NONPRODUCING ENTERPRISES: 1919.

FIELD.	Total.	PROPRIETORS AND FIRM MEMBERS.			SALARIED OFFICERS OF CORPORATIONS.			SUPERINTENDENTS AND MANAGERS.			TECHNICAL EMPLOYEES.			CLERKS AND OTHER SUBORDINATE SALARIED EMPLOYEES.			WAGE EARNERS.		WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.			PROPRIETORS PERFORMING MANUAL LABOR.	
		Number.		Per cent of total.	Number.		Per cent of total.	Number.		Per cent of total.	Number.		Per cent of total.	Number.		Average number.	Per cent of total.	Engineers, drillers, mechanics, etc.	All other.	Females included in "All other."	Number.	Per cent of total number of proprietors.	
		Male.	Female.		Male.	Female.		Male.	Female.		Male.	Female.		Male.	Female.								Male.
United States.....	125,930	12,953	1,366	11.4	2,374	65	1.9	4,774	20	3.8	800	7	0.7	6,102	3,720	7.8	93,659	74.4	64,750	36,992	123	1,995	13.9
Producing enterprises.....	125,110	12,860	1,363	11.4	2,329	63	1.9	4,684	20	3.8	861	7	0.7	6,046	3,672	7.8	90,205	74.5	64,230	36,750	118	1,967	14.0
Nonproducing enterprises.....	820	93	3	11.7	45	2	5.7	90	11.0	19	2.3	39	4.8	56	48	12.7	454	55.4	520	242	5	28	8.3
Appalachian field.....	43,969	9,506	1,071	24.1	753	14	1.7	1,266	5	2.9	161	2	0.4	1,925	937	6.5	28,329	64.4	19,985	9,188	1,737	1,737	16.4
Producing enterprises.....	43,866	9,451	1,069	24.0	749	14	1.7	1,257	5	2.9	161	2	0.4	1,921	934	6.5	28,303	64.5	19,968	9,161	1,737	1,737	16.5
Nonproducing enterprises.....	103	55	2	55.3	4	3.9	9	8.7	7	6.8	1	0.3	4	3	6.8	26	25.2	17	27	17	27	25.2	
Lima-Indiana field.....	2,464	832	136	39.3	38	1.5	82	3.3	2	0.1	28	2	2.2	1,320	53.6	1,061	229	1,061	229	119	119	12.3	
Producing enterprises.....	2,464	832	136	39.3	38	1.5	82	3.3	2	0.1	28	2	2.2	1,320	53.6	1,061	229	1,061	229	119	119	12.3	
Illinois and Southwest Indiana field.....	3,827	434	31	12.2	51	2	1.4	129	3.4	1	(1)	126	44	4.4	3,009	78.6	2,570	453	2,570	453	2	2	0.4
Producing enterprises.....	3,827	434	31	12.2	51	2	1.4	129	3.4	1	(1)	126	44	4.4	3,009	78.6	2,570	453	2,570	453	2	2	0.4
Mid-Continent field.....	54,214	1,963	103	3.8	1,145	36	2.2	2,525	9	4.7	622	5	1.2	2,857	2,335	9.6	42,614	78.6	26,092	22,610	21	98	4.5
Producing enterprises.....	53,795	1,939	102	3.8	1,118	34	2.1	2,464	9	4.6	614	5	1.2	2,822	2,309	9.5	42,389	78.8	25,820	22,499	29	86	4.3
Nonproducing enterprises.....	419	24	1	6.0	27	2	6.9	61	14.6	8	1.9	35	36	16.9	225	53.7	272	111	272	111	2	7	28.0
Gulf Coast field.....	4,378	85	4	2.0	76	2	1.8	198	4.5	28	0.6	322	79	9.2	3,563	81.8	2,368	1,707	2,368	1,707	9	19	21.3
Producing enterprises.....	4,327	85	4	2.1	73	2	1.7	194	4.5	26	0.6	314	76	9.0	3,552	82.1	2,333	1,690	2,333	1,690	9	19	21.3
Nonproducing enterprises.....	51	.....	.....	.....	3	5.9	4	7.8	2	3.9	8	3	21.6	31	60.8	35	27	35	27	.....	.....	.....	.....
Rocky Mountain field.....	2,610	8	.....	0.3	41	1	1.6	70	2.7	24	0.9	79	35	4.4	2,352	90.1	2,090	399	2,090	399	69	2	25.0
Producing enterprises.....	2,507	8	.....	0.3	35	1	1.4	63	2.5	8	0.3	73	34	4.3	2,285	91.1	2,028	345	2,028	345	69	2	25.0
Nonproducing enterprises.....	103	.....	.....	.....	6	5.8	7	6.8	16	15.5	6	1	6.8	67	65.0	62	44	62	44	3	3	.....	.....
Pacific Coast field.....	14,431	110	21	0.9	269	10	1.9	503	3.5	50	0.3	765	263	7.1	12,435	86.2	10,551	2,414	10,551	2,414	14	22	16.8
Producing enterprises.....	14,317	110	21	0.9	264	10	1.9	494	3.5	49	0.3	762	258	7.1	12,344	86.2	10,427	2,383	10,427	2,383	14	22	16.8
Nonproducing enterprises.....	114	.....	.....	.....	5	4.4	9	7.9	1	0.9	3	5	7.0	91	79.8	62	31	62	31	.....	.....	.....	.....
All other states.....	37	15	.....	40.5	1	2.7	1	2.7	2	5.4	.....	1	2.7	17	45.9	13	2	13	2	1	1	6.7	
Producing enterprises.....	7	1	.....	14.3	1	14.3	1	14.3	1	14.3	.....	1	14.3	3	42.9	3	.....	3	.....	.....	.....	.....	.....
Nonproducing enterprises.....	30	14	.....	46.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	46.7	10	.....	10	.....	.....	.....	.....	.....

<sup>1</sup> Less than one-tenth of 1 per cent.

**Persons not counted.**—The number of wage earners and other persons engaged in the petroleum and natural-gas industry reported at the census of 1919 (and at the census of 1909) is the number employed directly by the operators of producing and nonproducing enterprises. This number is considerably short of the total number of those in supervisory classes and the wage earners employed in connection with the petroleum and natural-gas industry. The reason for this is twofold: First, the drilling of new wells is done very largely by contractors whose employees can not be reported accurately by the operators, and the operators were not required to attempt to make such reports. The total amount paid for contract work is an indication of the number of employees not counted, and in 1919 was \$70,102,159, a large part of which was cost of labor and is to be compared with \$135,397,170 paid to wage earners employed directly by operators. Second, the operation of petroleum and natural-gas wells does not always require the constant attendance of regular employees. Many small enterprises dispense with the services of regular wage earners by hiring mechanics, "pumpers," or "lease attendants," etc., for a few hours per week. To meet this demand many mechanics and laborers in the oil fields work by the job for a number of operators. Returns from 1,895 operators showing occasional or part-time employment of wage earners have been tabulated as enterprises employing no wage earners. These enterprises were distributed in states as follows:

Pennsylvania.....	747	Illinois.....	22
Ohio.....	380	Kentucky.....	20
New York.....	225	Texas.....	19
West Virginia.....	194	California.....	15
Oklahoma.....	158	Louisiana.....	5
Kansas.....	73	Colorado.....	2
Indiana.....	34	Arkansas.....	1

Many operators, moreover, run their wells and gasoline-extraction plants without hired labor of any kind, performing the manual labor themselves. The number of proprietors performing all the labor themselves or employing very few or only occasional helpers and the percentage these were of the total number of proprietors is shown in Table 15, and should be taken into account in the consideration of the wage earners employed. In the oil fields in which proprietors and firm members were relatively important among the persons engaged in the industry—that is, in the Appalachian and Lima-Indiana fields—about one-sixth and one-eighth, respectively, of the proprietors performed manual labor in the operation of petroleum and natural-gas wells or natural-gas gasoline plants.

**Wage earners, by months.**—Table 16 shows for producing and nonproducing enterprises, by fields and by states, the number of wage earners employed on the 15th day of each month or the nearest representative day, the average number employed during the year, the months of maximum and minimum employment, and the ratio of the maximum to the minimum number. The changes in the number employed from month to month reflect conditions prevailing in the petroleum and natural-gas industry during the year.

It will be noted that the number of wage earners reported for all enterprises on a representative day, which is presented in several tables, aggregated 101,742 and is larger than the number shown for any month in Table 16. The representative day and month selected for reporting wage earners in detail varied with the individual enterprises, therefore the aggregate for the representative day differs from the total of the numbers reported by the several enterprises in any month.

TABLE 16.—WAGE EARNERS, BY MONTHS, BY FIELDS AND STATES: 1919.

[The month of maximum employment for each field and state is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

FIELD AND STATE.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States.....	93,659	85,485	85,393	87,455	88,472	90,439	91,606	94,850	99,101	100,108	99,909	100,163	100,067	84.6
Producing enterprises.....	92,205	85,225	85,119	87,130	88,120	90,015	91,156	94,389	98,570	99,570	99,332	99,541	100,393	84.9
Nonproducing enterprises.....	1,454	890	274	325	352	424	450	461	531	538	577	622	674	41.0
<i>Producing enterprises.</i>														
Mid-Continent field.....	42,389	36,748	36,767	38,245	39,080	40,142	40,481	42,627	45,601	46,688	46,894	47,426	48,099	76.5
Oklahoma.....	21,180	18,544	19,572	20,290	20,425	20,783	20,828	21,555	22,082	22,080	22,160	22,264	22,408	87.0
Texas, northern and central.....	10,415	7,162	7,455	8,138	8,831	9,443	9,618	10,656	12,358	12,801	13,008	13,445	13,877	55.5
Kansas.....	6,305	5,347	5,196	5,987	5,879	6,169	6,055	6,323	6,591	6,668	6,591	6,452	6,423	88.3
Louisiana, northwest.....	4,473	3,679	3,522	3,814	3,879	3,744	3,966	4,090	4,587	5,044	5,210	5,945	6,230	56.6
Arkansas.....	16	16	16	16	16	13	13	13	18	17	18	19	22	59.1
Appalachian field.....	28,308	26,816	26,439	26,783	27,180	27,607	28,389	29,414	30,197	29,888	29,304	28,837	28,835	87.5
West Virginia.....	12,302	11,833	11,625	11,693	12,007	12,199	12,378	12,857	13,884	12,667	12,637	12,425	12,417	90.2
Pennsylvania.....	9,065	8,495	8,363	8,526	8,537	8,642	9,321	9,831	9,843	9,477	9,263	9,263	9,310	85.0
Ohio, eastern.....	3,949	3,787	3,691	3,767	3,761	3,908	3,900	4,077	4,286	4,150	4,037	4,030	4,054	87.3
Kentucky.....	2,119	1,874	1,955	1,965	1,984	2,082	2,095	2,225	2,337	2,309	2,248	2,218	2,195	80.2
New York.....	898	827	802	793	801	826	863	884	917	919	905	881	859	84.8
Pacific Coast field.....	12,344	12,090	12,313	12,224	12,139	12,490	12,281	12,187	12,140	12,378	12,550	12,685	12,901	94.2
California.....	12,344	12,090	12,313	12,224	12,139	12,490	12,281	12,187	12,140	12,378	12,550	12,685	12,901	94.2
Gulf Coast field.....	3,552	3,069	3,224	3,425	3,335	3,294	3,302	3,474	3,796	3,851	3,898	3,981	3,975	77.1
Texas.....	3,184	2,718	2,870	3,057	2,990	2,943	2,985	3,101	3,409	3,460	3,522	3,595	3,606	75.4
Louisiana, southern.....	368	351	354	368	345	351	366	373	387	391	375	386	369	88.2
Illinois and Southwest Indiana field.....	3,009	3,018	2,963	2,997	2,940	2,913	2,975	3,046	3,122	3,085	3,018	2,968	3,017	93.1
Illinois.....	2,752	2,753	2,695	2,735	2,709	2,663	2,728	2,780	2,874	2,827	2,767	2,736	2,757	92.7
Indiana, southwest.....	267	265	268	262	231	250	247	266	248	258	251	232	260	80.2
Rocky Mountain field.....	2,285	2,180	2,061	2,205	2,163	2,325	2,420	2,318	2,370	2,349	2,330	2,325	2,354	86.0
Wyoming.....	2,167	2,062	1,969	2,067	2,045	2,201	2,306	2,195	2,245	2,283	2,210	2,212	2,243	85.0
Colorado and New Mexico.....	80	83	87	83	79	84	74	83	81	76	80	77	73	88.9
Montana.....	38	35	35	35	36	40	40	40	41	40	40	36	38	85.4
Lima-Indiana field.....	1,320	1,331	1,312	1,298	1,330	1,311	1,355	1,320	1,325	1,328	1,335	1,297	1,288	95.1
Ohio, northwest.....	1,174	1,195	1,169	1,163	1,191	1,174	1,208	1,171	1,181	1,181	1,174	1,141	1,155	94.0
Indiana, east central.....	146	136	143	130	139	137	147	149	154	147	141	150	153	89.7
All other states.....	3	3	3	3	3	3	3	3	3	3	3	3	3	.....
<i>Nonproducing enterprises.</i>														
Mid-Continent field.....	225	153	140	145	170	178	204	229	261	267	318	312	333	41.3
Texas, northern and central.....	148	78	80	86	108	115	146	153	178	195	210	208	215	36.3
Arkansas and Oklahoma.....	42	34	38	37	34	37	37	40	48	54	52	46	47	63.0
Louisiana, northwest.....	32	19	20	20	26	21	19	33	32	34	51	53	56	33.9
Kansas.....	3	2	2	2	2	2	2	3	3	3	5	5	5	40.0
Pacific Coast field.....	91	85	74	89	89	77	59	68	83	83	115	124	144	40.4
California.....	91	85	74	89	89	77	59	68	83	83	115	124	144	40.4
Rocky Mountain field.....	67	25	23	41	49	95	95	93	104	75	69	68	62	24.0
Wyoming.....	67	25	23	41	49	95	95	93	104	75	69	68	62	24.0
Gulf Coast field.....	31	7	11	20	14	23	37	26	35	38	39	58	64	10.9
Texas.....	31	7	11	20	14	23	37	26	35	38	39	58	64	10.9
Appalachian field.....	26	9	20	29	27	23	24	22	28	36	21	46	27	19.6
Kentucky.....	12	5	13	22	19	10	12	11	7	17	8	17	6	9.1
Ohio.....	9	7	7	7	8	8	7	10	8	12	12	12	10	53.3
West Virginia.....	5	.....	.....	.....	.....	5	5	1	13	7	1	17	11	5.9
All other states.....	14	1	1	1	3	28	31	23	20	19	15	14	12	3.2

Prevailing hours of labor.—Table 17 presents for producing and nonproducing enterprises in the petroleum and natural-gas industry, by fields and by states, a classification of enterprises according to the prevailing hours of labor per week reported by each enterprise, and shows the number of enterprises and wage earners for each class, with the per cent distribution. The table shows that the prevailing hours of labor were quite generally more than 54 per week, about 60 per cent of the enter-

prises employing wage earners reporting 54 or more hours per week. The hours per day in the petroleum and natural-gas industry were commonly 9 or 10, and very frequently longer. Furthermore, the 7-day week was the rule in many enterprises. The reason for prevalence of long hours in this industry is that drilling operations are usually conducted continuously, 24 hours per day and 7 days per week, and also because where there is large volume of production uninterrupted attendance is required.

TABLE 17.—NUMBER OF ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR PRODUCING AND NONPRODUCING ENTERPRISES: 1919.

FIELD AND STATE.	TOTAL.		NUMBER WHERE THE HOURS OF LABOR PER WEEK WERE—														
	Wage earners (average number).	Enterprises.	No wage earners.			35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.		72 to 84.	
			Number of enterprises.	Number of enterprises.	Wage earners (average number).	Number of enterprises.	Wage earners (average number).	Number of enterprises.	Wage earners (average number).	Number of enterprises.	Wage earners (average number).	Number of enterprises.	Wage earners (average number).	Number of enterprises.	Wage earners (average number).	Number of enterprises.	Wage earners (average number).
United States.....	98,659	9,970	3,344	852	1,295	226	320	1,680	13,296	2,398	44,258	733	21,805	787	12,686		
Producing enterprises.....	93,205	9,814	3,292	852	1,295	225	327	1,628	13,227	2,356	44,058	714	21,726	752	12,562		
Nonproducing enterprises.....	454	156	52	.....	.....	1	2	7	59	42	190	19	79	35	124		
<i>Producing enterprises.</i>																	
Appalachian field.....	28,308	5,549	2,462	615	787	141	195	1,032	7,049	1,023	17,228	114	1,928	163	1,116		
Kentucky.....	2,119	196	32	2	3	1	5	25	531	103	1,267	17	86	16	227		
New York.....	868	561	310	56	58	13	16	77	207	80	558	12	20	4	9		
Ohio, eastern.....	3,949	901	357	112	149	21	37	131	416	232	2,844	25	381	23	122		
Pennsylvania.....	9,066	3,140	1,487	388	503	94	121	659	2,814	387	4,923	22	80	103	624		
West Virginia.....	12,302	751	276	57	74	12	16	140	3,081	211	7,636	38	1,361	17	134		
Lima-Indiana field.....	1,320	538	273	66	54	10	17	84	162	89	1,083	8	30	8	24		
Indiana, east central.....	146	106	58	5	7	5	9	13	16	16	84	4	17	5	13		
Ohio, northwest.....	1174	432	215	61	47	5	8	71	146	73	949	4	13	3	11		
Illinois and Southwest Indiana field.....	3,009	261	38	6	8	6	6	81	279	72	2,144	38	219	72	353		
Illinois.....	2,752	236	35	5	7	6	6	26	242	65	1,999	30	157	69	311		
Indiana, southwest.....	267	25	1	1	1	.....	.....	5	37	7	145	8	32	3	42		
Mid-Continent field.....	42,899	2,871	467	156	338	65	104	404	2,670	848	12,320	446	16,458	485	10,490		
Arkansas.....	16	7	4	.....	.....	1	1	2	2	2	11	.....	.....	.....	.....		
Kansas.....	6,305	613	132	52	59	22	43	149	376	163	1,624	47	580	46	3,528		
Louisiana, northwest.....	4,473	114	14	2	77	.....	.....	4	20	19	717	58	3,527	17	132		
Oklahoma.....	21,180	1,069	253	91	185	38	51	218	2,004	573	8,029	266	8,267	260	2,644		
Texas, northern and central.....	10,415	488	64	11	17	4	5	34	270	61	1,939	75	3,984	159	4,200		
Gulf Coast field.....	3,552	134	7	2	9	2	4	3	6	14	158	93	2,967	13	506		
Louisiana, southern.....	368	10	1	.....	.....	1	3	.....	.....	2	1	12	351	3	13		
Texas.....	3,184	115	6	2	9	1	1	3	6	12	157	81	2,516	10	496		
Rocky Mountain field.....	2,285	55	7	.....	.....	.....	.....	10	263	30	1,757	9	306	9	89		
Colorado and New Mexico.....	80	11	5	.....	.....	.....	.....	2	39	2	39	2	2	.....	.....		
Montana.....	38	5	.....	.....	.....	.....	.....	1	3	4	35	.....	.....	.....	.....		
Wyoming.....	2,167	39	2	.....	.....	.....	.....	7	221	14	1,633	7	204	9	56		
Pacific Coast field.....	12,344	403	39	7	99	1	1	58	2,796	290	9,427	6	18	2	3		
California.....	12,344	403	39	7	99	1	1	58	2,796	290	9,427	6	18	2	3		
All other states <sup>1</sup> .....	3	3	1	.....	.....	.....	.....	1	2	1	1	.....	.....	.....	.....		
<i>Nonproducing enterprises.</i>																	
Appalachian field.....	26	18	11	.....	.....	.....	.....	.....	.....	6	21	.....	.....	1	5		
Kentucky.....	13	8	6	.....	.....	.....	.....	.....	.....	2	12	.....	.....	.....	.....		
Ohio, eastern.....	9	5	3	.....	.....	.....	.....	.....	.....	1	4	.....	.....	1	5		
West Virginia.....	6	5	2	.....	.....	.....	.....	.....	.....	3	5	.....	.....	.....	.....		
Mid-Continent field.....	226	102	35	.....	.....	1	2	1	3	25	111	11	30	29	79		
Arkansas and Oklahoma.....	42	29	8	.....	.....	.....	.....	.....	.....	5	10	3	1	13	31		
Kansas.....	3	10	8	.....	.....	.....	.....	.....	.....	1	2	.....	.....	1	1		
Louisiana, northwest.....	32	6	1	.....	.....	.....	.....	.....	.....	2	15	3	17	.....	.....		
Texas, northern and central.....	148	57	18	.....	.....	1	2	1	3	17	84	5	12	15	47		
Gulf Coast field.....	31	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	26	2	5		
Texas.....	31	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	26	2	5		
Rocky Mountain field.....	67	11	2	.....	.....	.....	.....	1	2	3	11	3	23	2	31		
Wyoming.....	67	11	2	.....	.....	.....	.....	1	2	3	11	3	23	2	31		
Pacific Coast field.....	91	13	1	.....	.....	.....	.....	4	41	7	46	.....	.....	1	4		
California.....	91	13	1	.....	.....	.....	.....	4	41	7	46	.....	.....	1	4		
All other states <sup>2</sup> .....	14	5	3	.....	.....	.....	.....	1	13	1	1	.....	.....	.....	.....		

<sup>1</sup> Includes Michigan, South Dakota, and Tennessee.

<sup>2</sup> Includes Pennsylvania and Washington.

LAND TENURE AND ROYALTIES.

Acreage and form of tenure.—Table 18 shows by fields for producing and nonproducing enterprises the total acreage of petroleum and natural-gas land operated and the acreage held by ownership or under lease, and also shows the per cent the land owned by the operators is of the total land operated. In this table and in others relating to acreage in the petroleum and natural-gas industry the number of acres given is only the acreage represented as operated by the reporting enterprises. It is notable that only in one field, the Pacific Coast field (California), is a large part of the land owned by the operators—five-

eighths for producing enterprises and one-half for non-producing enterprises. Except in the Pacific Coast field, less than 10 per cent of the land operated by producing enterprises was owned by them, and for non-producing enterprises less than 5 per cent and commonly less than 1 per cent was owned by the operators. Approximately 60 per cent of the total acreage controlled by producing enterprises was in the Appalachian field, 30 per cent in the Mid-Continent field, and 4 per cent in the Pacific Coast field. Of the acreage controlled by nonproducing enterprises, approximately 25 per cent was in the Appalachian field, 65 per cent in the Mid-Continent field, and 4 per cent in the Gulf Coast field.



TABLE 18.—ACREAGE OPERATED, ACCORDING TO FORM OF TENURE: 1919.

FIELD.	ACREAGE OPERATED.			
	Total.	Owned.	Held under lease.	Per cent owned is of total.
United States.....	12,431,519	1,175,713	11,255,806	9.5
Producing enterprises.....	12,171,388	1,172,068	10,999,320	9.6
Nonproducing enterprises.....	260,131	3,645	256,486	1.4
<i>Appalachian field:</i>				
Producing enterprises.....	7,120,485	572,165	6,548,320	8.0
Nonproducing enterprises.....	65,515	470	65,045	0.7
<i>Lima-Indiana field:</i>				
Producing enterprises.....	273,712	26,902	246,810	9.8
<i>Illinois and Southwest Indiana field:</i>				
Producing enterprises.....	190,490	2,629	187,861	1.4
<i>Mid-Continent field:</i>				
Producing enterprises.....	3,647,388	235,678	3,411,710	6.5
Nonproducing enterprises.....	171,184	236	170,948	0.1
<i>Gulf Coast field:</i>				
Producing enterprises.....	217,090	17,359	199,731	8.0
Nonproducing enterprises.....	11,586	505	11,081	4.4
<i>Rocky Mountain field:</i>				
Producing enterprises.....	219,787	16,830	202,957	7.7
Nonproducing enterprises.....	6,076		6,076	
<i>Pacific Coast field:</i>				
Producing enterprises.....	482,320	300,429	181,891	62.3
Nonproducing enterprises.....	4,869	2,433	2,436	50.0
<i>All other states:</i>				
Producing enterprises <sup>1</sup> .....	20,126	76	20,050	0.4
Nonproducing enterprises <sup>2</sup> .....	901	1	900	0.1

<sup>1</sup> Includes Michigan, South Dakota, and Tennessee.<sup>2</sup> Includes Pennsylvania and Washington.

Table 19 presents for producing enterprises by fields and by states, and for nonproducing enterprises by fields, the acreage of petroleum and natural-gas land operated in 1919 and 1909.

TABLE 19.—ACREAGE OPERATED, BY FIELDS AND STATES: 1919 AND 1909.

FIELD AND STATE.	ACREAGE.		
	1919	1909	Per cent of increase. <sup>1</sup>
United States.....	12,431,519	12,809,939	-10.0
Producing enterprises.....	12,171,388	12,094,838	-4.1
Nonproducing enterprises.....	260,131	1,115,101	-76.7
<i>Producing enterprises.</i>			
<i>Appalachian field.</i>	7,120,485	9,206,885	-22.7
Kentucky.....	323,015	289,286	11.7
New York.....	318,730	222,503	43.2
Ohio, eastern.....	1,239,391	1,483,392	-16.4
Pennsylvania.....	2,506,879	2,824,122	-11.2
West Virginia.....	2,732,470	4,387,632	-37.7
<i>Lima-Indiana field.</i>	296,167	520,889	-43.3
Indiana <sup>2</sup> .....	85,319	353,205	-75.8
Ohio, northwest.....	209,848	167,684	25.1
<i>Illinois field.</i>	190,490	396,135	-57.3
Illinois <sup>3</sup> .....	190,490	396,135	-57.3
<i>Mid-Continent field.</i>	3,647,388	1,857,024	96.4
Arkansas.....	46,621	46,045	1.2
Kansas.....	468,144	502,206	-6.8
Louisiana, northwest.....	260,986	( <sup>4</sup> )	
Oklahoma.....	1,730,661	1,119,238	54.6
Texas, northern and central.....	1,140,976	189,532	502.0
<i>Gulf Coast field.</i>	217,090	183,140	18.5
Louisiana, southern.....	68,356	96,316	-71.3
Texas.....	148,734	86,824	71.3
<i>Rocky Mountain field.</i>	219,787	37,373	488.1
Colorado and New Mexico <sup>5</sup> .....	15,485	31,223	-50.4
Montana.....	4,760		
Wyoming.....	199,542	6,150	3,144.6

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where figures are not comparable.<sup>2</sup> Includes the whole state of Indiana, for comparison with 1909 data.<sup>3</sup> Includes only the state of Illinois for comparison with 1909 data.<sup>4</sup> For 1909 the entire state of Louisiana was included in "Gulf Coast field."<sup>5</sup> Combined to avoid disclosure.

TABLE 19.—ACREAGE OPERATED, BY FIELDS AND STATES: 1919 AND 1909—Continued.

FIELD AND STATE.	ACREAGE.		
	1919	1909	Per cent of increase.
<i>Producing enterprises—Continued.</i>			
Pacific Coast field.....	482,320	455,444	5.9
California.....	482,320	455,444	5.9
All other states.....	20,126	37,948	
<i>Nonproducing enterprises.</i>			
Appalachian field.....	65,515	23,906	174.1
Lima-Indiana field.....		3,298	
Illinois field.....		9,100	
Mid-Continent field.....	171,184	35,552	381.5
Gulf Coast field.....	11,586	714,672	-98.4
Rocky Mountain field.....	6,076		
Pacific Coast field.....	4,869	103,281	-95.3
All other <sup>6</sup> .....	901	225,292	-99.6

<sup>6</sup> Includes Michigan, South Dakota, and Tennessee.<sup>7</sup> Includes Michigan, Missouri, North Dakota, and Tennessee.<sup>8</sup> Includes Pennsylvania and Washington in 1919. States not specified for 1909.

The table shows for the United States a small decrease in the acreage operated by producing enterprises and a very large decrease in the acreage operated by nonproducing enterprises. In the Appalachian, Lima-Indiana, and Illinois fields there was considerable decrease in the acreage operated by producing enterprises. In the Gulf Coast and Pacific fields there was a small increase in the acreage operated by producing enterprises; in the Mid-Continent field the increase was large and in the Rocky Mountain field it was very large. These changes reflect the stage of development of the fields, the first-named being the oldest, almost completely developed, and in part approaching exhaustion, whereas the two last-named fields are less thoroughly developed and have been the most extensively exploited in recent years.

In Table 20 producing and nonproducing enterprises in the petroleum and natural-gas industry are grouped according to form of tenure of land; that is, whether held by ownership, under lease, or partly by ownership and partly under lease, and there is shown for the United States and for fields and states the number of enterprises and the number of acres in each group under each form of tenure. For the United States as a whole 70 per cent of all enterprises were in the class operating only leased land which amounted to 45.7 per cent of the total acreage of land operated; 11.9 per cent of all enterprises were in the class operating land partly owned and partly held under lease, the land in this class forming 50.4 per cent of the total acreage; the remaining 18.1 per cent of the enterprises operated only land which they themselves owned and which amounted to about 4 per cent of the total acreage. Although in several states a considerable number of enterprises operated only land which they themselves owned, California was the only important state where the amount of such acreage was more than a small part of the total for the state.

TABLE 20.—NUMBER OF PRODUCING AND OF NONPRODUCING ENTERPRISES AND ACRES OF PETROLEUM AND NATURAL-GAS LAND CONTROLLED, CLASSIFIED ACCORDING TO FORM OF TENURE: 1919.

FIELD AND STATE.	ALL CLASSES.					ENTERPRISES OPERATING ONLY OWNED LAND.			ENTERPRISES OPERATING ONLY LAND HELD UNDER LEASE.			ENTERPRISES OPERATING LAND PARTLY OWNED AND PARTLY HELD UNDER LEASE.					
	Number of enterprises.	Acres controlled.				Number.	Acres controlled.		Number.	Acres controlled.		Number.	Acres controlled.				
		Aggregate.	By ownership.	By lease.	Per cent owned is of aggregate.		By ownership.	Per cent of aggregate.		By lease.	Per cent of aggregate.		Total.	By ownership.	By lease.	Per cent of aggregate.	
United States.....	9,740	12,481,519	1,175,713	11,255,806	9.5	1,765	479,334	3.9	6,815	5,685,170	45.7	1,160	6,256,515	695,879	5,570,636	50.4	
Producing enterprises.....	9,584	12,171,388	1,172,068	10,999,320	9.6	1,755	477,164	3.9	6,673	5,440,589	44.7	1,155	6,253,635	694,904	5,558,731	51.4	
Nonproducing enterprises.....	156	260,131	3,645	256,486	1.4	9	2,670	1.0	142	244,581	94.0	5	12,880	975	11,905	5.0	
<i>Producing enterprises.</i>																	
Appalachian field.....	5,507	7,120,485	572,165	6,548,320	8.0	1,282	231,998	3.3	3,490	3,062,393	43.0	735	3,826,096	340,169	3,485,927	83.7	
Kentucky.....	195	323,015	20,212	302,802	6.3	20	14,255	4.4	162	222,068	68.7	13	86,092	5,958	80,734	26.8	
New York.....	557	318,730	55,913	256,817	18.5	241	35,381	11.1	233	207,668	65.2	83	75,681	23,532	52,149	23.7	
Ohio, eastern.....	895	1,239,391	30,662	1,208,729	2.5	110	15,023	1.2	719	1,110,914	89.6	66	118,449	15,634	97,815	9.2	
Pennsylvania.....	3,121	2,508,879	395,700	2,110,179	15.8	856	151,401	6.0	1,753	607,060	24.2	512	1,748,418	245,299	1,503,119	69.7	
West Virginia.....	739	2,732,470	65,677	2,666,793	2.4	55	15,931	0.6	623	914,683	33.5	61	1,801,866	49,746	1,752,110	65.9	
Lima-Indiana field.....	538	273,712	26,902	246,810	9.8	82	12,092	4.4	367	122,170	44.6	59	139,450	14,810	124,640	50.9	
Indiana, east central.....	106	63,864	7,909	55,955	12.4	16	3,141	4.8	73	42,532	66.7	17	15,241	4,868	10,373	28.6	
Ohio, northwest.....	432	209,848	18,993	190,855	9.1	66	9,051	4.3	324	79,638	37.9	42	121,209	9,942	111,267	57.8	
Illinois and Southwest Indiana field.....	255	190,480	2,629	187,851	1.4	12	2,313	1.2	232	75,618	39.7	11	112,549	316	112,233	69.1	
Illinois.....	230	190,025	2,434	187,591	1.4	9	2,159	1.3	212	63,764	37.7	9	105,102	275	104,827	61.0	
Indiana, southwest.....	25	21,455	195	21,260	0.9	3	154	0.7	20	11,854	55.3	2	9,447	41	9,406	44.0	
Mid-Continent field.....	2,709	3,647,388	235,678	3,411,710	6.5	199	144,286	4.0	2,259	1,818,021	49.8	251	1,685,081	91,382	1,593,699	46.2	
Arkansas.....	7	49,621	2,700	43,921	5.8	1	2,500	5.4	5	41,747	89.5	1	2,874	800	2,174	5.1	
Kansas.....	607	468,144	34,727	433,417	7.4	40	12,632	2.7	520	325,921	69.6	47	159,591	22,065	137,526	27.7	
Louisiana, northwest.....	108	260,988	16,743	244,245	6.4	12	1,920	0.7	81	64,723	24.8	15	194,343	14,523	179,820	74.5	
Oklahoma.....	1,557	1,730,681	163,546	1,567,135	9.4	102	120,108	6.9	1,303	995,646	51.9	152	711,909	43,440	668,469	41.1	
Texas, northern and central.....	430	1,140,976	17,962	1,123,014	1.6	44	7,128	0.6	350	486,984	42.7	36	646,984	10,534	636,450	56.7	
Gulf Coast field.....	134	217,090	17,359	199,731	8.0	11	1,699	0.8	98	82,232	37.9	25	138,159	15,660	117,499	61.3	
Louisiana, southern.....	19	68,356	76	68,280	0.1	2	65	0.1	16	67,083	98.1	1	1,267	10	1,197	1.8	
Texas.....	115	148,734	17,283	131,451	11.6	9	1,633	1.1	82	15,149	10.2	24	131,952	15,650	116,302	88.7	
Rocky Mountain field.....	53	219,787	16,830	202,957	7.7	6	7,200	3.3	38	194,010	88.3	9	18,577	9,630	8,947	8.5	
Colorado and New Mexico.....	11	15,485	6,090	8,395	43.0	3	5,800	37.5	5	7,184	45.3	3	2,531	860	1,671	16.3	
Montana.....	5	4,790	1,990	2,800	41.2	1	1,180	24.4	3	2,440	45.4	1	1,440	800	640	30.3	
Wyoming.....	37	199,542	8,210	191,332	4.1	2	240	0.1	30	184,686	92.6	5	14,616	7,970	6,646	7.3	
Pacific Coast field.....	385	482,320	300,429	181,891	62.3	163	77,568	16.1	158	66,145	13.7	64	338,607	222,961	115,746	70.2	
California.....	385	482,320	300,429	181,891	62.3	163	77,568	16.1	158	66,145	13.7	64	338,607	222,961	115,746	70.2	
All other 1.....	3	20,126	76	20,050	0.4	1	10	(*)	1	20,000	99.4	1	116	66	50	0.6	
<i>Nonproducing enterprises.</i>																	
Appalachian field.....	18	65,515	470	65,045	0.7	1	400	0.6	16	64,975	99.2	1	140	70	70	0.2	
Kentucky.....	8	21,109	70	21,039	0.3	.....	.....	.....	7	20,969	99.3	1	140	70	70	0.7	
Ohio, eastern.....	5	32,839	400	32,439	1.2	1	400	1.2	4	32,439	98.8	.....	.....	.....	.....	.....	
West Virginia.....	5	11,567	.....	11,567	.....	.....	.....	.....	5	11,567	100.0	.....	.....	.....	.....	.....	
Mid-Continent field.....	102	171,184	236	170,948	0.1	3	195	0.1	98	167,513	97.9	1	3,476	41	3,435	2.0	
Arkansas and Oklahoma.....	29	5,604	180	5,424	2.7	1	150	2.7	28	5,454	97.3	.....	.....	.....	.....	.....	
Kansas.....	10	2,975	15	2,960	0.5	1	15	0.5	9	2,960	99.5	.....	.....	.....	.....	.....	
Louisiana, northwest.....	6	20,970	30	20,940	0.1	1	30	0.1	5	20,940	99.9	.....	.....	.....	.....	.....	
Texas, northern and central.....	57	141,635	41	141,594	(*)	.....	.....	.....	56	138,159	97.5	1	3,476	41	3,435	2.5	
Gulf Coast field.....	7	11,586	505	11,081	4.4	1	5	(*)	5	3,721	32.1	1	7,860	500	7,360	67.8	
Texas.....	7	11,586	505	11,081	4.4	1	5	(*)	5	3,721	32.1	1	7,860	500	7,360	67.8	
Rocky Mountain field.....	11	6,076	.....	6,076	.....	.....	.....	.....	11	6,076	100.0	.....	.....	.....	.....	.....	
Wyoming.....	11	6,076	.....	6,076	.....	.....	.....	.....	11	6,076	100.0	.....	.....	.....	.....	.....	
Pacific Coast field.....	13	4,899	2,433	2,466	50.0	4	2,070	42.5	8	1,595	32.8	1	1,204	363	841	24.7	
California.....	13	4,899	2,433	2,466	50.0	4	2,070	42.5	8	1,595	32.8	1	1,204	363	841	24.7	
All other 4.....	5	901	1	900	0.1	.....	.....	.....	4	701	77.8	1	200	1	199	22.2	

1 Exclusive of 230 enterprises operating only plants for the extraction of gasoline from natural gas. \* Includes Michigan, South Dakota, and Tennessee.  
 2 Less than one-tenth of 1 per cent. 3 Includes enterprises in states as follows: Pennsylvania, 3; Washington, 2.

**Royalties.**—The census of 1919 did not distinguish between royalties or rents paid for mineral land or rents of other kinds; however, as these other rents are generally insignificant in the petroleum and natural-gas industry, statistics presented for royalties and rents may, where lands are leased, be interpreted as royalty. This is a compensation for the privilege of obtaining petroleum and natural gas from leased land and is either a fixed share of the product or a percentage of the value of the product.  
 Table 21 presents, by fields and states, for the producing enterprises, exclusive of those operating natu-

ral-gas gasoline plants only, the value of products and the royalties and rents classified according to form of land tenure. Enterprises operating only leased acreage reported nearly 50 per cent of the total value of products and paid approximately 60 per cent of all royalties and rents. The amount so paid was 14 per cent of the value of products for this class. Enterprises operating both owned and leased land produced approximately 45 per cent of the total value of products and reported royalties and rents amounting to 42 per cent of all rents and royalties and to 11.1 per cent of the value of products for the class.

TABLE 21.—VALUE OF PRODUCTS AND ROYALTIES AND RENTS FOR PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO TENURE OF PETROLEUM AND NATURAL-GAS LAND: 1919.<sup>1</sup>

FIELD AND STATE.	ENTERPRISES OPERATING ONLY OWNED LAND.			ENTERPRISES OPERATING ONLY LAND HELD UNDER LEASE.			ENTERPRISES OPERATING LAND PARTLY OWNED AND PARTLY HELD UNDER LEASE.		
	Value of products.	Royalties and rents.		Value of products.	Royalties and rents.		Value of products.	Royalties and rents.	
		Amount.	Per cent of value of products.		Amount.	Per cent of value of products.		Amount.	Per cent of value of products.
United States.....	\$48,247,296	\$474,358	1.0	\$436,438,786	\$61,124,205	14.0	\$402,514,951	\$44,580,428	11.1
Appalachian field.....	9,158,263	140,919	1.5	118,657,766	12,974,222	11.4	118,084,028	10,206,777	9.0
Kentucky.....	650,214	47,267	7.3	20,495,137	3,634,871	17.7	2,178,928	288,782	13.3
New York.....	1,643,493	5,600	0.3	1,819,820	216,383	11.9	6,240,501	173,683	2.8
Ohio, eastern.....	574,672	29,638	5.2	35,503,553	3,480,578	9.8	4,025,757	475,109	11.8
Pennsylvania.....	5,197,795	49,003	0.9	28,189,672	2,447,298	10.6	36,444,929	3,673,068	10.1
West Virginia.....	1,060,089	9,421	0.9	32,649,584	3,195,092	9.8	64,193,998	5,596,135	8.7
Lima-Indiana field.....	221,016	8,288	3.7	2,487,689	335,886	13.5	3,508,712	577,887	16.5
Indiana, east central.....	35,887	1,631	4.5	625,086	52,585	8.4	297,544	39,256	13.2
Ohio, northwest.....	186,029	6,607	3.6	1,862,603	283,301	15.2	3,211,168	538,631	16.8
Illinois and Southwest Indiana field.....	86,855	4,777	5.5	10,812,605	1,486,946	13.8	21,780,745	3,499,790	16.1
Illinois.....	64,863	3,276	5.1	10,073,242	1,374,214	13.6	20,806,222	3,363,431	16.1
Indiana, southwest.....	21,992	1,501	6.8	739,363	112,732	15.2	884,523	136,359	15.4
Mid-Continent field.....	9,955,996	202,000	2.0	284,601,329	34,115,913	14.5	182,488,877	24,925,942	13.7
Arkansas.....	46,516	1,182	2.5	564,610	43,409	7.7	10,708	180	1.7
Kansas.....	576,498	18,453	3.2	31,175,067	4,890,956	15.7	35,749,786	4,808,841	12.9
Louisiana, northwest.....	670,591	10,660	1.6	9,879,831	1,082,248	11.0	18,177,250	2,701,117	14.9
Oklahoma.....	6,618,447	66,421	1.0	125,535,836	17,257,607	13.7	81,677,928	9,780,940	12.0
Texas, northern and central.....	2,043,944	105,284	5.2	67,445,965	10,841,693	16.1	46,868,206	7,846,864	16.7
Gulf Coast field.....	1,380,314	14,782	1.1	13,564,457	3,492,954	25.8	12,997,957	1,967,490	15.1
Louisiana, southern.....	53,431	8,956	16.8	1,156,471	155,119	13.5	1,188,977	253,150	29.7
Texas.....	1,326,883	5,826	0.4	12,407,986	3,338,835	26.9	11,808,980	1,614,340	13.7
Rocky Mountain field.....	116,287	1,434	1.2	12,180,174	1,185,361	9.8	8,681,655	386,628	4.5
Colorado and New Mexico.....	5,262	.....	.....	28,128	4,115	14.6	120,204	6,634	5.5
Montana.....	86,939	1,251	3.4	197,201	14,217	7.2	23,906	100	0.4
Wyoming.....	74,086	183	0.2	11,954,845	1,117,029	9.3	8,537,545	379,894	4.4
Pacific Coast field.....	27,328,935	102,208	0.4	49,088,165	7,578,408	15.4	59,977,132	3,015,750	5.0
California.....	27,328,935	102,208	0.4	49,088,165	7,578,408	15.4	59,977,132	3,015,750	5.0
All other states <sup>2</sup> .....	730	.....	.....	41,551	4,610	11.1	850	164	19.3

<sup>1</sup> Exclusive of data for those enterprises operating gasoline-extraction plants only and operating no petroleum and natural-gas land.  
<sup>2</sup> Includes Michigan, South Dakota, and Tennessee.

POWER.

Comparative summary for power used.—Table 22 presents, for the producing and nonproducing enterprises in the petroleum and natural-gas industry, the number and horsepower of the engines, motors, and other power equipment used in 1919 and 1909. The aggregate horsepower used increased considerably

during the period from 1909 to 1919, but the particularly noteworthy change is the large decrease in the number and horsepower of steam engines and the very large increase in the number and horsepower of the internal-combustion engines used. An extraordinary increase in the use of electric motors operated by purchased current is also shown.

TABLE 22.—COMPARATIVE STATISTICS, POWER USED: 1919 AND 1909.

	ALL ENTERPRISES.			PRODUCING ENTERPRISES.			NONPRODUCING ENTERPRISES.		
	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>
Power used: Aggregate horsepower.....	1,826,885	1,230,546	48.5	1,821,342	1,221,969	49.0	5,543	8,577	-35.4
Prime movers (horsepower, total).....	1,775,228	1,230,386	44.3	1,770,181	1,221,809	44.9	5,047	8,577	-41.2
Steam engines—									
Number.....	23,515	37,231	-36.8	23,412	36,928	-36.6	103	303	-66.0
Horsepower <sup>2</sup> .....	536,469	754,720	-28.9	532,774	746,658	-28.6	3,665	8,063	-54.2
Internal-combustion engines:									
Number.....	53,766	21,794	146.7	53,699	21,762	146.8	67	32	109.4
Horsepower.....	238,759	475,668	160.4	1,237,407	475,151	160.4	1,353	515	162.5
Equipment operated by purchased power.....	51,657	180	.....	51,161	180	.....	496	.....	.....
Electric motors—									
Number.....	1,849	6	.....	1,841	6	.....	8	.....	.....
Horsepower.....	45,134	160	.....	44,638	160	.....	496	.....	.....
Other.....									
Horsepower.....	6,523	( <sup>3</sup> )	.....	6,523	( <sup>3</sup> )	.....	.....	.....	.....
Electric motors run by current generated by the enterprise reporting:									
Number.....	1,330	454	193.0	1,329	454	192.7	1	.....	.....
Horsepower.....	28,166	8,589	227.9	28,164	8,589	227.9	2	.....	.....

<sup>1</sup> A minus sign (—) denotes decrease.

<sup>2</sup> Includes 40 horsepower reported for 2 water wheels.

<sup>3</sup> None reported.

Power used according to class of enterprises.—Table 23 presents by fields, for producing enterprises classified according to the products reported, the horsepower used per enterprise.

TABLE 23.—POWER USED BY PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO THE PRODUCTS REPORTED: 1919.

FIELD AND CLASS OF ENTERPRISE.	Number of enterprises.	Number of wells (total operated) or gas-oil plants.	Average number of wage earners.	POWER USED (AGGREGATE HORSE-POWER).			
				Total.	Per enterprise.	Per well or gas-oil plant.	Per wage earner.
<b>UNITED STATES.....</b>	9,814	( <sup>1</sup> )	93,205	1,321,342	135.6	.....	19.5
Enterprises reporting as products:							
Petroleum.....	6,799	111,036	29,490	578,814	85.1	5.2	19.6
Petroleum and natural gas.....	1,286	74,188	27,438	489,071	380.3	6.6	17.8
Petroleum, natural gas, and natural-gas gasoline.....	448	( <sup>1</sup> )	28,972	600,119	1,339.6	.....	20.7
Natural gas.....	1,032	14,717	3,713	37,291	36.1	2.5	10.0
Natural gas and natural-gas gasoline.....	19	( <sup>1</sup> )	203	4,817	253.5	.....	23.7
Natural-gas gasoline.....	230	363	3,391	111,230	483.6	306.4	32.8
<b>APPALACHIAN FIELD.....</b>	5,549	( <sup>1</sup> )	23,303	865,287	155.9	.....	30.6
Enterprises reporting as products:							
Petroleum.....	3,834	64,497	6,010	233,708	61.0	3.6	38.9
Petroleum and natural gas.....	654	27,527	3,918	147,473	225.5	5.4	37.6
Petroleum, natural gas, and natural-gas gasoline.....	328	( <sup>1</sup> )	15,189	440,269	1,342.3	.....	29.1
Natural gas.....	676	11,536	2,990	30,237	44.7	2.6	10.5
Natural gas and natural-gas gasoline.....	15	( <sup>1</sup> )	91	2,852	190.1	.....	31.3
Natural-gas gasoline.....	42	63	255	10,718	255.2	170.1	42.0
<b>LIMA-INDIANA FIELD.....</b>	538	( <sup>1</sup> )	1,320	45,771	85.1	.....	34.7
Enterprises reporting as products:							
Petroleum.....	437	9,636	615	22,703	52.0	2.4	36.9
Petroleum and natural gas.....	22	8,322	653	22,062	1,002.8	2.6	33.8
Natural gas.....	79	988	52	1,006	12.7	1.1	19.3
<b>ILLINOIS AND SOUTHWEST INDIANA FIELD.....</b>	361	( <sup>1</sup> )	3,009	38,743	148.4	.....	12.9
Enterprises reporting as products:							
Petroleum.....	196	4,218	677	11,139	56.8	2.6	16.5
Petroleum and natural gas.....	6	422	96	1,945	324.2	4.6	20.3
Petroleum, natural gas, and natural-gas gasoline.....	37	( <sup>1</sup> )	2,195	24,494	600.1	.....	11.1
Natural gas.....	15	89	10	194	12.9	2.2	19.4
Natural gas and natural-gas gasoline.....	1	( <sup>1</sup> )	1	35	35.0	.....	35.0
Natural-gas gasoline.....	6	8	30	1,006	167.7	125.8	33.5
<b>MID-CONTINENT FIELD.....</b>	2,871	( <sup>1</sup> )	42,389	587,806	204.7	.....	13.9
Enterprises reporting as products:							
Petroleum.....	1,833	24,249	12,127	153,225	83.6	6.3	12.6
Petroleum and natural gas.....	563	35,154	19,381	273,388	485.6	7.8	14.1
Petroleum, natural gas, and natural-gas gasoline.....	61	( <sup>1</sup> )	7,354	71,721	1,175.8	.....	9.8
Natural gas.....	249	2,104	728	5,625	22.6	2.7	7.7
Natural gas and natural-gas gasoline.....	3	( <sup>1</sup> )	111	1,630	643.3	.....	17.4
Natural-gas gasoline.....	162	260	2,688	81,916	505.7	315.1	30.5
<b>GULF COAST FIELD.....</b>	134	( <sup>1</sup> )	3,552	48,727	363.6	.....	13.7
Enterprises reporting as products:							
Petroleum.....	131	2,040	3,081	40,107	306.2	19.7	13.0
Petroleum and natural gas.....	1	513	459	8,600	8,600.0	18.8	13.7
Natural gas.....	2	6	12	20	10.0	3.3	1.7
<b>ROCKY MOUNTAIN FIELD.....</b>	55	( <sup>1</sup> )	2,285	14,851	270.0	.....	6.5
Enterprises reporting as products:							
Petroleum.....	39	607	834	8,156	209.1	13.4	9.8
Petroleum and natural gas.....	6	284	437	1,375	229.2	4.8	3.1
Petroleum, natural gas, and natural-gas gasoline.....	2	( <sup>1</sup> )	900	2,410	1,205.0	.....	3.0
Natural gas.....	6	25	15	185	30.8	7.4	12.8
Natural-gas gasoline.....	2	3	199	2,725	1,362.5	906.3	13.7

<sup>1</sup> Number not shown for enterprises operating both wells and extraction plants.  
<sup>2</sup> Includes Michigan, South Dakota, and Tennessee.

TABLE 23.—POWER USED BY PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO THE PRODUCTS REPORTED: 1919—Contd.

FIELD AND CLASS OF ENTERPRISE.	Number of enterprises.	Number of wells (total operated) or gas-oil plants.	Average number of wage earners.	POWER USED (AGGREGATE HORSE-POWER).			
				Total.	Per enterprise.	Per well or gas-oil plant.	Per wage earner.
<b>PACIFIC COAST FIELD.....</b>	403	( <sup>1</sup> )	12,344	230,089	546.1	.....	17.8
Enterprises reporting as products:							
Petroleum.....	328	5,763	6,145	109,756	334.6	19.0	17.9
Petroleum and natural gas.....	33	1,939	2,490	34,149	1,034.8	17.6	13.7
Petroleum, natural gas, and natural-gas gasoline.....	20	( <sup>1</sup> )	3,484	61,295	3,064.8	.....	17.6
Natural gas.....	4	18	6	24	6.0	1.3	4.0
Natural-gas gasoline.....	18	29	219	14,865	823.8	512.6	67.9
<b>ALL OTHER STATES<sup>2</sup>.....</b>	3	( <sup>1</sup> )	3	99	33.0	.....	33.0
Enterprises reporting as products:							
Petroleum.....	1	26	1	30	30.0	0.8	20.0
Petroleum and natural gas.....	1	17	2	79	79.0	4.6	39.5
Natural gas.....	1	1	.....	.....	.....	.....	.....

The table shows that the power requirements of enterprises producing petroleum were greater than of those producing natural gas, but the relatively greatest requirements were for enterprises operating natural-gas gasoline plants. The table also shows that in general the horsepower per well was less in the Appalachian, Lima-Indiana, and Illinois fields than in the Mid-Continent, Gulf Coast, Rocky Mountain, and Pacific Coast fields.

FUEL USED.

Table 24 shows the quantities of the various kinds of fuel used for the enterprises in the petroleum and natural-gas industry grouped according to the products reported. The detailed table for the industry, Table 25, shows the quantities of fuel used by fields and states.

TABLE 24.—FUEL USED BY PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO THE PRODUCTS REPORTED: 1919.

CLASS OF ENTERPRISE.	Coal, bituminous (tons, 2,000 pounds).	Wood (cords).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Natural gas (1,000 cubic feet).
Total.....	67,216	2,852	5,898,610	45,654	99,967,358
Enterprises reporting as products:					
Petroleum.....	37,069	731	3,852,643	29,123	27,577,375
Petroleum and natural gas.....	4,554	632	1,751,690	3,798	31,579,694
Petroleum, natural gas, and natural-gas gasoline.....	5,209	262	282,514	100	29,346,797
Natural gas.....	20,334	1,227	11,163	322	3,199,622
Natural gas and natural-gas gasoline.....	.....	.....	.....	.....	250,915
Natural-gas gasoline.....	50	.....	600	12,256	7,712,956

GENERAL TABLE.

Table 25 presents in detail for 1919 the statistics for producing and nonproducing petroleum and natural-gas enterprises in the United States as a whole and for fields and for each state in which the industry can be shown without disclosure of individual operations. The table gives the number of enterprises and wells and

gasoline-extraction plants, the acreage and form of tenure of petroleum and natural-gas land, the capital invested, the principal expenses of operation and development, the quantity and value of products, persons engaged in the industry by classes, the number and horsepower of power equipment, and the fuel used.

INDUSTRY AND QUARRIES.

PETROLEUM AND NATURAL-GAS INDUSTRY, BY FIELDS AND STATES: 1919.

	PETROLEUM AND NATURAL-GAS LAND OPERATED (ACRES).							PERSONS ENGAGED IN THE INDUSTRY.						
	Total operated during year.	Productive Dec. 31.	Gasoline plants.	Total.	Owned.	Leased.	Aggregate.	Proprietors and officials.						
								Total.	Proprietors and firm members.	Balanced officers.	Superintendents and managers.	Technical employees.		
	9,970	262,784	257,673	1,115	12,451,519	1,175,713	11,255,806	125,920	22,449	14,319	1,995	2,429	4,794	897
	9,814	262,508	257,673	1,115	12,171,488	1,173,068	10,998,330	125,110	22,187	14,223	1,987	2,292	4,704	868
Non-producing enterprises.....	5,549	147,096	142,947	615	7,120,485	572,165	6,548,320	43,866	12,708	10,520	1,737	763	1,262	163
Pennsylvania.....	196	5,006	5,214	7	323,015	20,213	302,802	2,634	357	59	9	102	180	16
Ohio.....	581	14,296	14,186	6	315,730	55,913	259,817	2,014	910	810	173	49	40	11
West Virginia.....	901	20,130	18,859	53	1,239,391	30,662	1,208,729	6,931	2,192	1,737	69	174	256	35
Michigan.....	3,140	78,996	77,325	319	2,506,579	396,700	2,110,179	17,255	7,280	6,548	1,420	227	451	64
Tennessee.....	751	26,508	27,363	230	2,732,470	65,677	2,666,793	15,032	1,969	1,376	57	211	335	47
Indiana.....	538	18,906	18,186	.....	273,712	26,902	246,810	2,464	1,090	968	119	38	82	2
Indiana, east central.....	106	1,786	1,605	.....	63,964	7,909	55,955	323	156	107	25	19	28	2
Ohio, northwest.....	432	17,120	16,581	.....	209,748	18,993	190,855	2,141	934	861	94	19	54	.....
Illinois and Southwest Indiana field.....	261	17,898	17,349	72	190,490	2,629	187,861	3,327	643	465	2	53	120	1
Illinois.....	236	16,931	16,498	72	189,025	2,434	186,591	3,506	605	449	2	44	112	.....
Indiana, southwest.....	25	937	851	.....	21,465	195	21,260	321	43	16	.....	9	17	1
Mid-Continent field <sup>2</sup> .....	2,871	70,664	66,545	365	3,647,388	235,678	3,411,710	53,795	6,285	2,041	86	1,152	2,473	619
Arkansas.....	7	138	124	.....	46,621	2,700	43,921	40	19	.....	.....	.....	.....	.....
Kansas.....	613	13,613	12,690	11	468,144	34,727	433,417	8,131	1,211	639	32	187	250	126
Louisiana, northwest.....	114	2,580	2,332	20	260,986	16,743	244,243	5,232	330	39	.....	63	189	39
Oklahoma.....	1,699	47,066	44,735	311	1,730,661	163,546	1,567,115	26,378	3,309	980	24	701	1,340	288
Texas, northern and central <sup>3</sup> .....	438	7,267	6,664	23	1,140,976	17,962	1,123,014	14,014	1,416	383	30	193	681	159
Gulf Coast field <sup>4</sup> .....	134	2,559	2,232	.....	217,090	17,359	199,731	4,327	385	89	19	75	195	26
Louisiana, southern.....	19	212	147	.....	63,356	76	63,280	437	51	19	2	6	24	2
Texas <sup>5</sup> .....	115	2,347	2,085	.....	143,734	17,283	126,451	3,890	334	70	17	69	171	24
Rocky Mountain field.....	55	1,393	1,133	5	219,787	16,830	202,957	2,507	115	8	2	36	63	8
Colorado and New Mexico <sup>6</sup> .....	11	53	71	.....	15,485	6,660	8,825	101	17	8	2	2	7	.....
Montana.....	5	31	28	.....	4,760	1,960	2,800	48	6	.....	.....	2	3	1
Wyoming.....	39	1,279	1,084	5	199,542	8,210	191,332	2,358	92	.....	.....	32	53	7
Pacific Coast field.....	403	9,378	9,197	58	482,320	300,429	181,891	14,317	953	131	22	274	499	49
California.....	403	9,378	9,197	58	482,320	300,429	181,891	14,317	953	131	22	274	499	49
All other states <sup>7</sup> .....	3	44	34	.....	20,126	76	20,050	7	3	1	.....	1	1	.....
Nonproducing enterprises.....	156	376	.....	.....	260,131	3,645	256,485	820	263	96	8	47	90	29
Appalachian field.....	18	67	.....	.....	65,515	470	65,045	103	70	57	.....	4	9	.....
Kentucky.....	8	36	.....	.....	21,109	70	21,039	70	56	48	.....	2	6	.....
Ohio, eastern.....	5	17	.....	.....	32,839	400	32,439	18	4	.....	.....	2	2	.....
West Virginia.....	5	14	.....	.....	11,567	.....	11,567	17	10	9	.....	.....	1	.....
Mid-Continent field.....	102	155	.....	.....	171,184	236	170,948	419	123	25	7	29	61	8
Arkansas and Oklahoma <sup>8</sup> .....	29	66	.....	.....	5,604	150	5,454	68	24	1	.....	9	13	1
Kansas.....	10	25	.....	.....	2,975	15	2,960	20	16	14	1	.....	2	.....
Louisiana, northwest.....	6	11	.....	.....	20,970	30	20,940	50	13	.....	.....	.....	11	2
Texas, northern and central.....	57	63	.....	.....	141,635	41	141,594	281	70	10	6	20	35	5
Gulf Coast field.....	7	6	.....	.....	11,536	505	11,031	51	9	.....	.....	3	4	2
Texas.....	7	6	.....	.....	11,536	505	11,031	51	9	.....	.....	3	4	2
Rocky Mountain field.....	11	21	.....	.....	6,076	.....	6,076	103	29	.....	.....	6	7	16
Wyoming.....	11	21	.....	.....	6,076	.....	6,076	103	29	.....	.....	6	7	16
Pacific Coast field.....	13	15	.....	.....	4,969	2,433	2,436	114	15	.....	.....	5	9	1
California.....	13	15	.....	.....	4,969	2,433	2,436	114	15	.....	.....	5	9	1
All other states <sup>9</sup> .....	5	12	.....	.....	901	1	900	30	16	14	1	.....	.....	2

<sup>1</sup> Statistics for Pennsylvania include those for small operations in New York, inseparably combined in the report of an enterprise which conducted the major part of its operations in Pennsylvania.

<sup>2</sup> Statistics for the Mid-Continent field include those for 2 small operations in Texas in the Gulf Coast field, inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas.

<sup>3</sup> Statistics for Oklahoma include those for small operations in Texas, inseparably combined in the report of an enterprise which conducted the major part of its operations in Oklahoma.

<sup>4</sup> Statistics for northern and central Texas include those for 2 small operations in Texas in the Gulf Coast field, inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas; statistics for northern and central Texas exclude the small operations of an enterprise reporting the major part of its operations in Oklahoma.

<sup>5</sup> Statistics for Texas in the Gulf Coast field exclude those for 2 small operations inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas.

<sup>6</sup> Includes 10 enterprises in Colorado and 1 enterprise in New Mexico in order to avoid disclosure of individual operations.

<sup>7</sup> Includes enterprises in the states of Michigan, South Dakota, and Tennessee.

<sup>8</sup> Includes 1 enterprise in Arkansas and 28 enterprises in Oklahoma in order to avoid disclosure of individual operations.

<sup>9</sup> Includes 3 enterprises in Pennsylvania and 2 enterprises in Washington.

TABLE 25.—DETAILED STATISTICS FOR THE PETROLEUM AND NATURAL-GAS INDUSTRY, BY FIELDS AND STATES: 1919—Continued.

FIELD AND STATE.	PERSONS ENGAGED IN THE INDUSTRY—continued.										Capital.	Expenditures for development (included in principal expenses).	Value of products.
	Clerks and other subordinate salaried employees.		Wage earners.				Wage earners Dec. 15 or nearest representative day.						
	Male.	Female.	Average number.	Number 15th day of—		Total.	Engineers.	All other.	Females included in "All other."				
				Maximum month.	Minimum month.								
<b>United States.....</b>	<b>6,192</b>	<b>3,720</b>	<b>93,659</b>	<b>De 190,987</b>	<b>Fe 25,293</b>	<b>161,743</b>	<b>64,750</b>	<b>26,993</b>	<b>123</b>	<b>22,446,444,796</b>	<b>232,553,420</b>	<b>931,793,493</b>	
<b>Producing enterprises.....</b>	<b>6,068</b>	<b>3,673</b>	<b>93,206</b>	<b>De 190,293</b>	<b>Fe 25,119</b>	<b>160,980</b>	<b>64,230</b>	<b>26,750</b>	<b>118</b>	<b>2,431,485,943</b>	<b>230,567,439</b>	<b>931,793,493</b>	
<b>Appalachian field.....</b>	1,921	934	28,203	Au 30,197	Fe 26,436	29,129	16,968	9,161	.....	570,005,698	37,204,715	239,244,406	
Kentucky.....	90	66	2,119	Au 2,337	Ja 1,874	2,297	1,491	806	.....	55,785,065	6,529,041	25,329,521	
New York <sup>1</sup> .....	181	55	858	Jy 334	Mh 792	889	612	277	.....	39,799,123	1,219,536	9,900,894	
Ohio, eastern.....	494	306	3,949	Au 4,226	Fe 3,691	4,096	3,211	835	.....	85,965,774	6,270,941	40,223,726	
Pennsylvania <sup>1</sup> .....	649	261	9,065	Se 9,843	Fe 8,363	9,417	6,463	2,954	.....	201,180,270	9,704,215	66,271,951	
West Virginia.....	517	244	12,302	Au 12,886	Fe 11,625	12,430	8,201	4,229	.....	186,275,466	13,270,683	99,513,304	
<b>Lima-Indiana field.....</b>	28	26	1,320	Ju 1,355	De 1,288	1,310	1,061	229	.....	14,308,973	658,653	6,218,317	
Indiana, east central.....	6	15	146	Oc 161	Mh 130	157	115	42	.....	4,516,430	184,598	953,517	
Ohio, northwest.....	22	11	1,174	Jy 1,208	De 1,158	1,153	986	187	.....	9,792,543	474,055	5,264,800	
<b>Illinois and Southwest Indiana field.....</b>	126	44	3,009	Au 3,123	Ma 2,913	3,023	2,370	453	.....	51,581,628	1,397,532	22,906,441	
Illinois.....	115	34	2,752	Au 2,874	Ma 2,663	2,758	2,351	367	.....	48,207,294	1,133,165	21,263,563	
Indiana, southwest.....	11	10	257	Fe 288	Ap 231	265	179	86	.....	6,374,334	264,367	1,642,878	
<b>Mid-Continent field<sup>2</sup>.....</b>	<b>2,322</b>	<b>2,209</b>	<b>42,399</b>	<b>De 48,020</b>	<b>Ja 26,748</b>	<b>48,319</b>	<b>25,820</b>	<b>22,469</b>	<b>29</b>	<b>1,206,260,821</b>	<b>150,535,785</b>	<b>464,045,161</b>	
Arkansas.....	2	3	16	De 22	Ma <sup>3</sup> 13	19	15	4	.....	2,089,888	144,134	621,834	
Kansas.....	381	234	6,305	Se 6,656	Ap 5,879	6,502	3,544	2,958	.....	237,711,466	23,127,585	69,515,158	
Louisiana, northwest.....	320	109	4,473	De 6,230	Fe 3,523	6,237	2,517	3,720	1	77,439,322	10,272,445	29,617,208	
Oklahoma <sup>4</sup> .....	1,113	776	21,180	De 22,463	Ja 19,544	22,615	12,634	10,061	2	699,663,144	54,346,778	247,497,489	
Texas, northern and central <sup>5</sup> .....	1,008	1,177	10,415	Oc 12,906	Ja 7,162	12,946	7,210	5,736	26	279,367,501	62,644,945	117,708,513	
<b>Gulf Coast field<sup>6</sup>.....</b>	<b>314</b>	<b>76</b>	<b>3,652</b>	<b>No 3,961</b>	<b>Ja 3,069</b>	<b>4,013</b>	<b>2,333</b>	<b>1,680</b>	<b>9</b>	<b>59,062,639</b>	<b>9,343,632</b>	<b>27,943,728</b>	
Louisiana, southern.....	14	4	368	Se 391	Ap 345	371	186	135	.....	4,243,344	729,197	2,398,379	
Texas <sup>7</sup> .....	300	72	3,184	De 3,606	Ja 2,713	3,642	2,147	1,495	9	54,849,295	8,614,335	25,545,349	
<b>Rocky Mountain field.....</b>	<b>73</b>	<b>34</b>	<b>2,285</b>	<b>Ju 2,420</b>	<b>Fe 2,081</b>	<b>2,373</b>	<b>2,026</b>	<b>345</b>	<b>66</b>	<b>69,379,443</b>	<b>5,963,186</b>	<b>22,371,577</b>	
Colorado and New Mexico <sup>8</sup> .....	3	1	80	Fe 87	De 73	73	50	23	4	2,931,633	206,567	153,594	
Montana.....	3	1	38	Au 41	Ja <sup>9</sup> 35	38	29	9	.....	327,067	60,261	258,046	
Wyoming.....	67	32	2,167	Ju 2,306	Fe 1,969	2,262	1,949	313	62	65,620,743	5,722,068	21,956,927	
<b>Pacific Coast field.....</b>	<b>762</b>	<b>258</b>	<b>12,344</b>	<b>De 12,801</b>	<b>Ja 12,060</b>	<b>12,810</b>	<b>10,437</b>	<b>2,383</b>	<b>14</b>	<b>369,851,160</b>	<b>25,632,823</b>	<b>139,018,663</b>	
California.....	762	258	12,344	De 12,801	Ja 12,060	12,810	10,437	2,383	14	369,851,160	25,632,823	139,018,663	
<b>All other states<sup>10</sup>.....</b>	<b>.....</b>	<b>1</b>	<b>3</b>	<b>.....</b>	<b>.....</b>	<b>3</b>	<b>3</b>	<b>.....</b>	<b>.....</b>	<b>1,005,280</b>	<b>14,963</b>	<b>48,131</b>	
<b>Nonproducing enterprises.....</b>	<b>56</b>	<b>43</b>	<b>454</b>	<b>De 634</b>	<b>Ja 290</b>	<b>763</b>	<b>599</b>	<b>343</b>	<b>5</b>	<b>24,999,353</b>	<b>5,965,961</b>	<b>.....</b>	
<b>Appalachian field.....</b>	<b>4</b>	<b>3</b>	<b>26</b>	<b>No 46</b>	<b>Ja 9</b>	<b>44</b>	<b>17</b>	<b>27</b>	<b>.....</b>	<b>640,100</b>	<b>304,779</b>	<b>.....</b>	
Kentucky.....	2	2	12	Mh 22	Ja 2	19	6	13	.....	332,326	147,371	.....	
Ohio, eastern.....	2	1	9	Se <sup>11</sup> 12	Ja <sup>12</sup> 7	10	10	.....	86,011	50,319	.....		
West Virginia.....	2	.....	5	No 17	Jy <sup>13</sup> 1	15	1	14	.....	221,763	98,089	.....	
<b>Mid-Continent field.....</b>	<b>35</b>	<b>36</b>	<b>225</b>	<b>De 323</b>	<b>Ja 133</b>	<b>383</b>	<b>272</b>	<b>111</b>	<b>2</b>	<b>19,342,496</b>	<b>3,571,819</b>	<b>.....</b>	
Arkansas and Oklahoma <sup>14</sup> .....	.....	2	42	Se 54	Ja 34	71	50	21	.....	1,644,963	593,066	.....	
Kansas.....	.....	1	3	De <sup>15</sup> 5	Ja <sup>16</sup> 2	7	7	.....	245,028	104,472	.....		
Louisiana, northwest.....	1	4	32	De 56	Ja <sup>17</sup> 19	57	54	3	2	656,487	309,977	.....	
Texas, northern and central.....	34	29	148	De 215	Ja 78	248	161	87	.....	15,798,020	2,063,674	.....	
<b>Gulf Coast field.....</b>	<b>8</b>	<b>3</b>	<b>31</b>	<b>De 64</b>	<b>Ja 7</b>	<b>62</b>	<b>35</b>	<b>27</b>	<b>.....</b>	<b>309,060</b>	<b>207,582</b>	<b>.....</b>	
Texas.....	8	3	31	De 64	Ja 7	62	35	27	.....	309,060	207,582	.....	
<b>Rocky Mountain field.....</b>	<b>6</b>	<b>1</b>	<b>67</b>	<b>Au 104</b>	<b>Ja 25</b>	<b>106</b>	<b>62</b>	<b>44</b>	<b>3</b>	<b>2,427,130</b>	<b>724,308</b>	<b>.....</b>	
Wyoming.....	6	1	67	Au 104	Ja 25	106	62	44	3	2,427,130	724,308	.....	
<b>Pacific Coast field.....</b>	<b>3</b>	<b>5</b>	<b>91</b>	<b>De 146</b>	<b>Ju 59</b>	<b>155</b>	<b>124</b>	<b>31</b>	<b>.....</b>	<b>2,044,447</b>	<b>704,684</b>	<b>.....</b>	
California.....	3	5	91	De 146	Ju 59	155	124	31	.....	2,044,447	704,684	.....	
<b>All other states<sup>10</sup>.....</b>	<b>.....</b>	<b>.....</b>	<b>14</b>	<b>.....</b>	<b>.....</b>	<b>12</b>	<b>10</b>	<b>2</b>	<b>.....</b>	<b>197,018</b>	<b>172,364</b>	<b>.....</b>	

<sup>1</sup> Statistics for Pennsylvania include those for small operations in New York, inseparably combined in the report of an enterprise which conducted the major part of its operations in Pennsylvania.

<sup>2</sup> Statistics for the Mid-Continent field include those for 2 small operations in Texas in the Gulf Coast field, inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas.

<sup>3</sup> Same number reported for one or more other months.

<sup>4</sup> Statistics for Oklahoma include those for small operations in Texas, inseparably combined in the report of an enterprise which conducted the major part of its operations in Oklahoma.

<sup>5</sup> Statistics for northern and central Texas include those for 2 small operations in Texas in the Gulf Coast field, inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas; statistics for northern and central Texas exclude the small operations of an enterprise reporting the major part of its operations in Oklahoma.

<sup>6</sup> Statistics for Texas in the Gulf Coast field exclude those for 2 small operations inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas.

<sup>7</sup> Includes 10 enterprises in Colorado and 1 enterprise in New Mexico in order to avoid disclosure of individual operations.

<sup>8</sup> Includes enterprises in the states of Michigan, South Dakota, and Tennessee.

<sup>9</sup> Includes 1 enterprise in Arkansas and 23 enterprises in Oklahoma in order to avoid disclosure of individual operations.

<sup>10</sup> Includes 3 enterprises in Pennsylvania and 2 enterprises in Washington.

## MINES AND QUARRIES.

TABLE 25.—DETAILED STATISTICS FOR THE PETROLEUM AND NATURAL-GAS INDUSTRY, BY FIELDS AND STATES: 1919—Continued.

FIELD AND STATE.	PRINCIPAL EXPENSES.										
	Total.	Salaries and wages.			Cost of gas purchased as material and for resale.	Supplies and materials.	Cost of fuel.	Cost of purchased power.	Royalties and rents.	Taxes—Federal, state, county, and local.	Contract work.
		Salaried officers, superintendents, managers, and technical employees.	Clerks and other subordinate salaried employees.	Wage earners.							
United States.....	\$633,194,578	\$31,680,600	\$12,196,194	\$125,397,179	\$23,213,671	\$196,069,600	\$30,071,902	\$973,687	\$107,050,247	\$33,743,338	\$70,108,159
Producing enterprises...	633,194,578	31,375,372	12,092,996	124,521,247	23,213,671	195,058,633	29,823,776	965,300	106,452,513	33,690,630	68,663,699
Appalachian field.....	142,066,351	5,069,189	3,207,262	31,317,862	16,774,073	32,998,383	3,782,432	62,828	23,425,503	9,685,654	15,743,165
Kentucky.....	15,598,795	678,346	147,994	2,645,512	41,104	4,006,774	233,411	.....	3,970,910	961,974	2,912,770
New York <sup>1</sup> .....	7,104,245	183,796	265,792	1,087,232	2,692,086	1,215,807	191,476	.....	395,666	455,307	617,083
Ohio, eastern.....	24,471,241	1,034,720	937,829	4,949,251	3,022,271	4,584,987	707,611	10,603	3,986,230	1,961,609	3,206,130
Pennsylvania <sup>2</sup> .....	41,960,319	1,547,369	966,580	10,219,433	5,077,115	8,962,963	1,596,224	21,825	6,170,090	1,935,648	5,523,072
West Virginia.....	52,901,751	1,624,958	889,067	12,416,434	5,871,497	14,227,852	1,083,710	30,400	8,902,607	4,371,116	3,484,110
Lima-Indiana field.....	4,124,819	166,412	43,194	1,607,934	50,842	724,008	179,183	4,460	923,011	139,858	296,917
Indiana, east central.....	728,287	65,060	12,177	213,906	50,546	111,493	38,583	3,380	93,472	46,031	90,589
Ohio, northwest.....	3,396,532	101,352	31,017	1,394,028	296	612,515	140,600	1,080	828,539	83,827	206,328
Illinois and Southwest Indiana field.....	14,002,918	609,390	218,534	3,539,397	91,659	1,852,654	174,283	3,947	5,019,463	2,011,563	423,029
Illinois.....	13,087,410	546,547	195,921	3,277,515	91,659	1,692,172	151,570	3,079	4,768,871	1,970,994	359,082
Indiana, southwest.....	945,508	62,843	22,613	261,882	.....	160,482	22,713	868	250,592	40,568	122,947
Mid-Continent field <sup>3</sup> .....	352,844,864	11,899,564	6,779,793	65,979,085	11,308,655	123,463,599	9,214,233	197,046	59,391,762	15,917,806	43,703,281
Arkansas.....	448,522	26,140	3,280	26,563	165,786	75,691	9,816	.....	44,771	14,475	82,000
Kansas.....	60,858,413	1,393,209	806,539	9,615,375	287,725	30,046,473	3,269,151	61,983	9,547,568	1,943,568	3,887,822
Louisiana, northwest.....	23,797,196	810,789	523,449	6,446,492	736,434	7,253,989	1,162,867	924	3,794,147	1,061,598	2,006,497
Oklahoma <sup>4</sup> .....	159,063,170	6,868,049	3,927,418	30,749,438	9,768,073	49,598,967	2,373,833	107,765	27,211,429	9,782,360	18,695,838
Texas, northern and central <sup>5</sup> .....	108,677,573	2,801,377	1,530,107	19,141,217	800,637	36,488,479	2,308,566	26,374	18,793,849	3,115,866	24,081,074
Gulf Coast field <sup>6</sup> .....	24,004,436	814,156	426,191	6,016,934	4,088	6,600,174	2,238,625	29,281	5,475,226	549,107	1,760,654
Louisiana, southern.....	1,961,449	83,871	23,370	589,022	4,088	308,565	264,996	.....	518,225	53,741	25,571
Texas <sup>7</sup> .....	22,042,987	730,285	402,821	5,427,912	.....	6,291,609	1,973,629	29,281	4,957,001	496,366	1,735,083
Rocky Mountain field.....	11,871,641	331,945	135,490	3,686,778	74,281	3,929,660	308,462	4,499	1,623,423	1,198,236	678,807
Colorado and New Mexico <sup>8</sup> .....	357,528	17,313	5,065	141,966	.....	128,414	20,369	4,489	10,749	20,143	.....
Montana.....	159,600	11,006	3,354	58,087	.....	43,492	14,989	.....	15,568	10,862	2,272
Wyoming.....	11,354,513	308,626	127,071	3,486,735	74,281	3,757,754	273,094	.....	1,497,106	1,158,221	676,626
Pacific Coast field.....	77,521,507	2,491,691	1,281,967	22,367,544	510,073	25,385,586	3,931,081	663,249	10,696,356	9,195,204	998,766
California.....	77,521,507	2,491,691	1,281,967	22,367,544	510,073	25,385,586	3,931,081	663,249	10,696,356	9,195,204	998,766
All other states <sup>9</sup> .....	32,326	3,025	575	5,713	.....	14,629	487	.....	4,774	3,123	.....
Nonproducing enterprises	6,655,716	305,233	106,122	675,923	.....	3,061,107	942,616	7,737	561,729	87,758	1,439,500
Appalachian field.....	340,233	17,913	4,815	31,525	.....	130,009	4,399	.....	11,334	4,294	135,959
Kentucky.....	156,590	10,113	930	13,291	.....	56,735	2,355	.....	6,274	928	65,914
Ohio, eastern.....	65,193	6,800	2,920	13,470	.....	18,957	1,966	.....	3,570	2,334	15,176
West Virginia.....	118,455	1,000	965	4,764	.....	54,267	68	.....	1,490	1,082	54,899
Mid-Continent field.....	4,388,913	183,618	68,363	452,459	.....	1,781,063	156,502	503	552,629	46,630	1,146,956
Arkansas and Oklahoma <sup>10</sup> .....	651,923	19,615	4,685	85,892	.....	275,111	29,364	.....	45,626	2,363	189,373
Kansas.....	111,236	2,328	1,625	8,783	.....	28,208	2,375	503	2,376	98	64,940
Louisiana, northwest.....	685,420	19,763	4,246	47,318	.....	103,387	10,672	.....	400,603	40,560	88,941
Texas, northern and central.....	2,940,329	141,912	57,797	310,466	.....	1,374,367	114,091	.....	104,224	3,779	833,703
Gulf Coast field.....	251,035	16,363	13,333	55,166	.....	145,386	15,523	.....	.....	514	4,760
Texas.....	251,035	16,363	13,333	55,166	.....	145,386	15,523	.....	.....	514	4,760
Rocky Mountain field.....	757,106	48,843	7,492	114,513	.....	434,058	40,009	.....	15,669	2,849	93,643
Wyoming.....	757,106	48,843	7,492	114,513	.....	434,058	40,009	.....	15,669	2,849	93,643
Pacific Coast field.....	744,083	35,496	10,585	190,072	.....	444,036	22,405	7,164	10,827	3,205	20,303
California.....	744,083	35,496	10,585	190,072	.....	444,036	22,405	7,164	10,827	3,205	20,303
All other states <sup>9</sup> .....	174,341	3,015	550	32,188	.....	96,555	3,788	60	1,240	66	36,879

<sup>1</sup> Statistics for Pennsylvania include those for small operations in New York, inseparably combined in the report of an enterprise which conducted the major part of its operations in Pennsylvania.

<sup>2</sup> Statistics for the Mid-Continent field include those for 2 small operations in Texas in the Gulf Coast field, inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas.

<sup>3</sup> Statistics for Oklahoma include those for small operations in Texas, inseparably combined in the report of an enterprise which conducted the major part of its operations in Oklahoma.

<sup>4</sup> Statistics for northern and central Texas include those for 2 small operations in Texas in the Gulf Coast field, inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas; statistics for northern and central Texas exclude the small operations of an enterprise reporting the major part of its operations in Oklahoma.

<sup>5</sup> Statistics for Texas in the Gulf Coast field exclude those for 2 small operations inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas.

<sup>6</sup> Includes 10 enterprises in Colorado and 1 enterprise in New Mexico in order to avoid disclosure of individual operations.

<sup>7</sup> Includes enterprises in the states of Michigan, South Dakota, and Tennessee.

<sup>8</sup> Includes 1 enterprise in Arkansas and 28 enterprises in Oklahoma in order to avoid disclosure of individual operations.

<sup>9</sup> Includes 3 enterprises in Pennsylvania and 2 enterprises in Washington.

PETROLEUM AND NATURAL GAS.

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TABLE 25.—DETAILED STATISTICS FOR THE PETROLEUM AND NATURAL-GAS INDUSTRY, BY FIELDS AND STATES: 1919—Continued.

FIELD AND STATE.	POWER USED.										FUEL USED.					
	Aggregate horsepower.	Prime movers.				Equipment operated by purchased power.			Electric motors run by current generated by the enterprise reporting.		Coal, bituminous (tons, 2,000 lbs.).	Wood (cords).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Natural gas (1,000 cubic feet).	
		Total horsepower.	Steam engines.		Internal-combustion engines.		Electric motors.		Other.	Number.						Horsepower.
			Number.	Horsepower. <sup>1</sup>	Number.	Horsepower.	Number.	Horsepower.								
United States.....	1,833,668	1,776,338	23,515	1,536,480	53,798	1,236,780	1,849	45,134	6,533	1,330	26,166	73,439	4,168	6,079,647	48,611	106,561,471
Producing enterprises.....	1,831,948	1,770,181	23,412	1,532,774	53,659	1,237,407	1,841	44,638	6,533	1,329	26,164	67,216	2,858	5,993,610	48,604	106,567,348
Appalachian field.....	865,287	857,625	13,774	277,784	30,798	579,891	108	2,084	5,548	565	10,004	30,300	1,582	38,884	12,066	28,136,208
Kentucky.....	13,795	13,795	151	2,738	659	11,057	.....	.....	.....	1	1	8,406	.....	37,639	9,437	751,455
New York <sup>2</sup> .....	30,196	30,196	662	8,907	1,509	21,299	.....	.....	.....	4	10	1,243	.....	.....	1	1,097,257
Ohio, eastern.....	111,805	111,733	1,044	21,397	4,337	90,336	6	72	.....	2	37	6,549	.....	802	703	4,938,113
Pennsylvania <sup>3</sup> .....	371,267	365,062	3,511	156,580	13,910	208,562	41	637	5,548	203	2,341	6,602	1,582	168	2,447	9,488,454
West Virginia.....	338,194	336,819	3,416	88,162	10,283	248,657	61	1,375	.....	355	7,615	7,500	.....	185	108	11,860,920
Lima-Indiana field.....	45,771	45,598	176	4,071	1,955	41,627	22	173	.....	.....	.....	7,975	.....	916	141	709,490
Indiana, east central.....	4,366	4,248	48	1,194	158	3,054	18	108	.....	.....	.....	7,169	.....	673	114	212,287
Ohio, northwest.....	41,415	41,350	128	2,877	1,797	38,473	5	65	.....	.....	.....	816	.....	283	27	407,203
Illinois and Southwest Indiana field.....	35,743	35,624	187	3,999	1,589	34,625	9	89	30	2	25	4,025	.....	6,777	1,617	1,927,463
Illinois.....	35,430	35,326	170	3,588	1,723	31,738	8	74	30	2	25	3,385	.....	6,777	1,581	1,806,962
Indiana, southwest.....	3,313	3,298	17	411	116	2,887	1	15	.....	.....	.....	640	.....	.....	36	117,501
Mid-Continent field <sup>4</sup> .....	587,905	578,998	4,203	115,039	15,663	463,959	343	7,907	900	389	10,388	20,768	1,270	1,654,652	29,349	46,511,273
Arkansas.....	617	617	3	210	4	407	.....	.....	.....	1	12	1,200	.....	.....	.....	52,080
Kansas.....	95,883	91,971	482	13,346	3,067	78,625	163	3,912	.....	249	7,440	5,470	.....	672,021	3,299	7,769,509
Louisiana, northwest.....	71,770	71,736	694	17,865	1,863	53,871	2	34	.....	4	110	.....	.....	182,890	230	13,546,074
Oklahoma <sup>5</sup> .....	352,224	349,243	2,209	57,826	9,528	291,417	139	3,091	900	41	394	7,209	70	186,922	17,336	15,134,427
Texas, northern and central <sup>6</sup> .....	66,301	65,431	815	28,792	1,411	39,639	39	870	.....	94	2,432	8,089	.....	608,119	8,514	10,006,158
Gulf Coast field <sup>7</sup> .....	48,727	48,222	1,654	40,331	329	7,891	25	506	.....	23	210	.....	.....	1,951,942	1,228	277,630
Louisiana, southern.....	7,479	7,479	295	7,135	6	844	.....	.....	.....	21	200	.....	.....	222,412	215	890
Texas <sup>8</sup> .....	41,248	40,743	1,359	33,196	323	7,047	25	506	.....	1	10	.....	.....	1,729,530	1,013	276,750
Rocky Mountain field.....	14,851	14,721	382	7,097	244	7,624	15	130	.....	1	75	4,148	.....	120,949	181	2,422,165
Colorado and New Mexico <sup>9</sup> .....	1,713	1,588	116	1,428	11	155	15	130	.....	.....	.....	2,059	.....	1,739	30	6,820
Montana.....	245	245	4	138	5	107	.....	.....	.....	.....	.....	.....	.....	197	.....	671,621
Wyoming.....	12,893	12,888	212	5,531	228	7,362	.....	.....	.....	1	75	1,892	.....	119,210	151	1,743,724
Pacific Coast field.....	220,089	186,294	3,084	84,471	2,866	101,623	1,318	33,750	45	350	7,462	.....	.....	2,124,490	442	19,981,454
California.....	220,089	186,294	3,084	84,471	2,866	101,623	1,318	33,750	45	350	7,462	.....	.....	2,124,490	442	19,981,454
All other states <sup>10</sup> .....	99	99	2	32	5	67	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,675
Nonproducing enterprises.....	5,543	5,647	163	2,696	67	1,353	8	449	.....	1	2	6,328	1,264	181,067	2,257	694,113
Appalachian field.....	249	249	6	112	7	137	.....	.....	.....	.....	.....	650	.....	.....	8	4,240
Kentucky.....	108	106	4	66	3	40	.....	.....	.....	.....	.....	178	.....	.....	8	690
Ohio, eastern.....	96	96	2	46	2	50	.....	.....	.....	.....	.....	474	.....	.....	.....	2,200
West Virginia.....	47	47	.....	.....	2	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,350
Mid-Continent field.....	3,215	3,195	58	2,356	40	839	1	20	.....	.....	.....	3,824	1,256	83,979	966	423,619
Arkansas and Oklahoma <sup>11</sup> .....	891	891	16	607	14	284	.....	.....	.....	.....	.....	2,385	.....	2,185	.....	35,500
Kansas.....	151	131	2	58	4	73	1	20	.....	.....	.....	125	.....	480	56	2,000
Louisiana, northwest.....	181	181	6	181	5	.....	.....	.....	.....	.....	.....	.....	1,256	3,045	.....	5,250
Texas, northern and central.....	1,992	1,992	34	1,510	22	482	.....	.....	.....	.....	.....	1,314	.....	78,268	900	377,869
Gulf Coast field.....	192	192	6	178	3	14	.....	.....	.....	1	2	.....	.....	81,523	.....	.....
Texas.....	192	192	6	178	3	14	.....	.....	.....	1	2	.....	.....	81,523	.....	.....
Rocky Mountain field.....	639	639	16	561	5	68	.....	.....	.....	.....	.....	1,326	.....	12,526	.....	80,400
Wyoming.....	639	639	16	561	5	68	.....	.....	.....	.....	.....	1,326	.....	12,526	.....	80,400
Pacific Coast field.....	1,023	548	13	388	7	165	6	475	.....	.....	.....	4	.....	3,009	1,253	110,854
California.....	1,023	548	13	388	7	165	6	475	.....	.....	.....	4	.....	3,009	1,253	110,854
All other states <sup>12</sup> .....	235	234	4	106	5	129	1	1	.....	.....	.....	418	.....	.....	140	5,000

<sup>1</sup> Includes 40 horsepower reported for 2 water wheels in Pennsylvania.  
<sup>2</sup> Statistics for Pennsylvania include those for small operations in New York, inseparably combined in the report of an enterprise which conducted the major part of its operations in Pennsylvania.  
<sup>3</sup> Statistics for the Mid-Continent field include those for 2 small operations in Texas in the Gulf Coast field, inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas.  
<sup>4</sup> Statistics for Oklahoma include those for small operations in Texas, inseparably combined in the report of an enterprise which conducted the major part of its operations in Oklahoma.  
<sup>5</sup> Statistics for northern and central Texas include those for 2 small operations in Texas in the Gulf Coast field, inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas; statistics for northern and central Texas exclude the small operations of an enterprise reporting the major part of its operations in Oklahoma.  
<sup>6</sup> Statistics for Texas in the Gulf Coast field exclude those for 2 small operations inseparably combined in the reports of 2 enterprises which conducted the major part of their operations in northern Texas.  
<sup>7</sup> Includes 10 enterprises in Colorado and 1 enterprise in New Mexico in order to avoid disclosure of individual operations.  
<sup>8</sup> Includes enterprises in the states of Michigan, South Dakota, and Tennessee.  
<sup>9</sup> Includes 1 enterprise in Arkansas and 28 enterprises in Oklahoma in order to avoid disclosure of individual operations.  
<sup>10</sup> Includes 3 enterprises in Pennsylvania and 2 enterprises in Washington.





# IRON ORE.

## INTRODUCTION.

**Scope of the report.**—This report presents the results of the census of mines and quarries for the year 1919 for the iron-ore mining industry. It includes statistics showing: The geographic distribution of the industry by states and mining regions; the progress of the industry by comparison of results of the census of 1919 with those of the three preceding censuses of mines and quarries; the character of organization and the size of operating enterprises; persons engaged in the industry; the acreage of mineral and other lands controlled; and power equipment and fuel used. It includes also a general table presenting statistics in detail for the United States as a whole and separately for such states as can be shown without the disclosure of individual operations.

**Definitions and explanations.**—Iron ore of various kinds, such as magnetite, hematite, limonite or brown ore, carbonate or spathic ore, and variously designated varieties of these, are mined and used chiefly for the manufacture of iron. A small part of the production reported in 1919 was used as pigment in the manufacture of metallic paint, and a very small quantity for other special uses.

Many iron ores contain manganese and are designated manganiferous ores when the manganese content is sufficient to be of special worth. The difference between iron ore and manganiferous iron ore is arbitrarily determined and commonly a content of more than 5 per cent manganese is sufficient for designation of ores as manganiferous. As some enterprises, and, indeed, some individual mines produced both iron ore and manganiferous ores, the classification of these enterprises for purposes of tabulation has resulted in the inclusion of statistics on mining and production of manganiferous ores with the statistics for iron ore.

Iron ore is to a large extent used crude as obtained from the mine, but at many mines the quality of the ore as mined must be improved by some process of washing, or crushing and concentrating, or sintering before the material is suitable for most advantageous use. Such beneficiation was practiced by about one-fourth of the iron-ore mining enterprises in 1919, and the statistics herein presented, relating primarily to iron-ore mining, cover also the operation of beneficiating plants at the mines.<sup>1</sup>

Iron ore is mined from both underground workings, such as are entered by shaft, slope, or adit, and from surface or open-cut workings. In some mines productive operations are conducted both underground and at the surface or in open pits. In other mines the pits are so large and deep that the operations partake of both the hazards and expense of underground operations. Therefore, the classification of iron-ore mining enterprises according to method of mining, as by open-pit or underground work, is unsatisfactory, and statistical data are not presented separately for open-pit and underground mines. Wage earners, however, are classified as employed above and below ground in accordance with reports made by the operators.

**Method of reporting quantity and value of products.**—The statistics on production of iron ore were collected in cooperation with the United States Geological Survey, for which purpose there was provided, in addition to the general schedule of the census, a supplemental schedule requesting special information desired by the Geological Survey. These schedules called for the quantity of crude iron ore mined, the quantity of crude ore treated if the ore was subjected to any beneficiation, and the quantity of beneficiated ore recovered. The supplemental schedule also called for the quantity and value of crude ore and of cleaned or concentrated ore shipped or used, including withdrawal from stock, and for information as to stocks on hand. These data furnished a basis for computing the value for the year f. o. b. mines of iron ore produced and thus checked the value of products on the general schedule or supplied it when that schedule did not correctly report the total value of crude and beneficiated ores produced during the year. The Bureau of the Census tabulated only the quantity and value of ore produced during the census year. The Geological Survey reported the quantity of ore produced, and the quantity and value of ore shipped or used. The first quantity is designated "ore mined" by the Geological Survey, and is in accord with the quantity designated "iron ore produced" by the Bureau of the Census. The unit of quantity used is the long ton of 2,240 pounds.

Table 1 shows for 1919 for all states that can be presented separately the quantity and value of iron ore shipped as reported by the United States Geological Survey. Table 2 repeats these figures for selected states and gives the quantities of iron ore mined as reported by the United States Geological Survey and the quantities and values of iron ore produced as reported by the Bureau of the Census.

<sup>1</sup> The quantity of beneficiated ore shipped in 1919 was approximately 13 per cent of the total shipments.—U. S. Geological Survey, Mineral Resources, 1919.

TABLE 1.—IRON ORE SHIPPED FROM MINES: 1919.<sup>1</sup>

STATE.	Quantity (tons, 2,240 pounds.)	Value.
United States.....	56,372,784	\$197,312,517
Alabama.....	4,895,309	11,954,425
California.....	2,053	13,796
Georgia.....	74,007	294,619
Michigan.....	12,911,727	49,774,212
Minnesota.....	24,547,356	121,107,247
Missouri.....	53,626	223,144
New Jersey.....	336,629	1,712,255
New Mexico.....	234,553	806,688
New York.....	701,688	4,002,312
North Carolina.....	58,778	231,530
Pennsylvania.....	616,271	1,240,219
Tennessee.....	282,988	817,549
Utah.....	44,185	177,327
Virginia.....	304,920	1,139,349
Wisconsin.....	881,740	3,283,290
Other states <sup>2</sup> .....	486,954	764,705

<sup>1</sup> U. S. Geological Survey, Mineral Resources of the United States, 1919.

<sup>2</sup> Includes Colorado, Connecticut, Idaho, Maryland, Massachusetts, Montana, Texas, Washington, and Wyoming.

TABLE 2.—COMPARISON OF REPORTS ON PRODUCTION, BUREAU OF THE CENSUS AND UNITED STATES GEOLOGICAL SURVEY: 1919.

STATE.	BUREAU OF THE CENSUS.		GEOLOGICAL SURVEY.		
	Iron ore produced.		Iron ore mined.	Iron ore shipped.	
	Quantity (tons, 2,240 pounds).	Value.	Quantity (tons, 2,240 pounds).	Quantity (tons, 2,240 pounds).	Value.
United States.....	61,173,254	\$217,949,311	60,965,418	56,372,784	\$197,312,517
Alabama.....	5,053,035	12,291,760	5,053,035	4,895,309	11,954,425
Georgia.....	71,224	283,487	71,224	74,007	294,619
Michigan.....	15,410,494	60,785,440	15,438,930	12,911,727	49,774,212
Minnesota.....	36,258,483	128,333,021	36,000,626	24,547,356	121,107,247
New York.....	868,995	5,215,346	871,495	701,688	4,002,312
Tennessee.....	282,988	823,407	283,792	282,988	817,549
Virginia.....	304,524	1,186,127	305,096	304,920	1,139,349
Wisconsin.....	1,062,948	3,826,872	1,087,247	881,740	3,283,290
Other states <sup>1</sup> .....	1,860,563	5,203,851	1,853,973	1,773,049	4,969,514

<sup>1</sup> Includes California, Connecticut, Idaho, Maryland, Massachusetts, Missouri, Montana, New Jersey, New Mexico, North Carolina, Pennsylvania, Texas, Utah, Washington, and Wyoming; in the Bureau of the Census statistics also Arkansas; and in the Geological Survey statistics also Colorado.

The apparent discrepancy, a net excess in the census figures for the United States of 207,836 tons mined, comprises the difference in the quantities reported for certain states—principally Minnesota, Michigan, and Wisconsin. The figures for Minnesota are different because the Bureau of the Census classified as iron-ore mining enterprises some that produced manganese ores, and the differences in Michigan and Wisconsin are due to inclusion by the Geological Survey of figures for iron ore used for flux, paint, and other purposes not reported to the Bureau of the Census. Other minor differences are due principally to inclusion in the Geological Survey tabulation of reports of products by enterprises too small to come within the scope of the census. The value of products as reported by the Bureau of the Census in other tables, includes, in addition to the value of the quantity of iron ore reported, the value of other mineral products and other receipts from mining operations which are shown in the following statement:

Copper ore, manganese ore, limestone, and sandstone....	\$150,756
Products not specified and receipts for power, work, miscellaneous services, etc.....	117,838
Total.....	268,594

Differences between the census of 1919 and the census of 1909.—As explained in the foregoing paragraphs, the value of product of the iron-ore mining industry as reported by the Fourteenth Census is the value of the iron ore mined or recovered by beneficiation during the census year. It is the value which bears a direct relation to the data furnished in reply to other census inquiries on mining operations. The value of products of iron-ore mines reported by the census of 1909, unless otherwise specified, is that of the ore used and sold, conforming to the Geological Survey's figures and is not the value of the ore actually produced during the census year. In Tables 6 and 7 of this report the estimated value of ore mined in 1909 is used in order to present comparable figures.

### PRINCIPAL STATISTICS.

Producing and nonproducing mines, general summary for the United States.—The following summary, Table 3, presents for the United States the principal statistics for producing and nonproducing iron-ore mines in 1919.

TABLE 3.—PRINCIPAL STATISTICS: 1919.

	Total.	Producing enterprises.	NONPRODUCING ENTERPRISES.	
			Number or amount.	Per cent of total.
Number of enterprises.....	308	290	18	5.8
Number of mines.....	424	406	18	4.2
Number of enterprises operating beneficiating plants.....	74	74		
Mineral land operated.....acres..	246,014	241,808	4,506	1.8
Land controlled, total.....acres..	943,826	938,716	5,110	0.5
Mineral land owned.....acres..	179,635	177,296	2,339	1.3
Mineral land leased.....acres..	67,447	65,280	2,167	3.2
Timber and other lands.....acres..	696,744	696,140	604	0.1
Persons engaged.....	49,417	48,767	650	1.3
Proprietors and firm members, total.....	41	41		
Number performing manual labor.....	9	9		
Salaried employees.....	3,087	2,985	52	1.7
Wage earners (average number).....	46,389	45,741	598	1.3
Wage earners, Dec. 15 or nearest representative day—				
Above ground.....	19,475	19,050	425	2.2
Below ground.....	28,909	28,690	219	0.8
Power used (aggregate horsepower).....	381,044	370,869	10,175	2.7
Capital.....	\$512,280,704	\$501,396,044	\$10,884,660	2.1
Principal expenses:				
Salaries.....	\$7,044,573	\$6,936,660	\$107,913	1.5
Wages.....	\$76,008,551	\$75,713,459	\$295,092	1.3
Contract work.....	\$2,406,117	\$1,671,788	\$734,329	32.3
Supplies and materials.....	\$27,841,973	\$27,187,882	\$654,141	2.3
Fuel.....	\$8,870,864	\$8,700,358	\$170,506	1.9
Purchased power.....	\$1,635,574	\$1,504,231	\$131,343	2.5
Royalties and rents.....	\$28,080,918	\$24,944,936	\$3,135,982	0.5
Taxes.....	\$31,150,247	\$30,829,610	\$320,637	1.0
Expenditures for development (included in the above items).....	\$17,360,204	\$14,657,841	\$2,702,453	15.6
Value of all products.....	\$218,217,905	\$218,217,905		
Iron ore—				
Quantity (tons, 2,240 pounds).....	61,173,254	61,173,254		
Value at mine.....	\$217,949,311	\$217,949,311		
Other products.....	\$268,594	\$268,594		

There were 308 iron-ore mining enterprises in operation in 1919 engaged in working 424 mines. The number of individual operators is not determinable and bears no fixed relation to the num-

ber of enterprises and the number of mines for the reason that some operators reported separately for each mine or enterprise, and others made consolidated reports on several enterprises and mines controlled by them and by their affiliated companies.

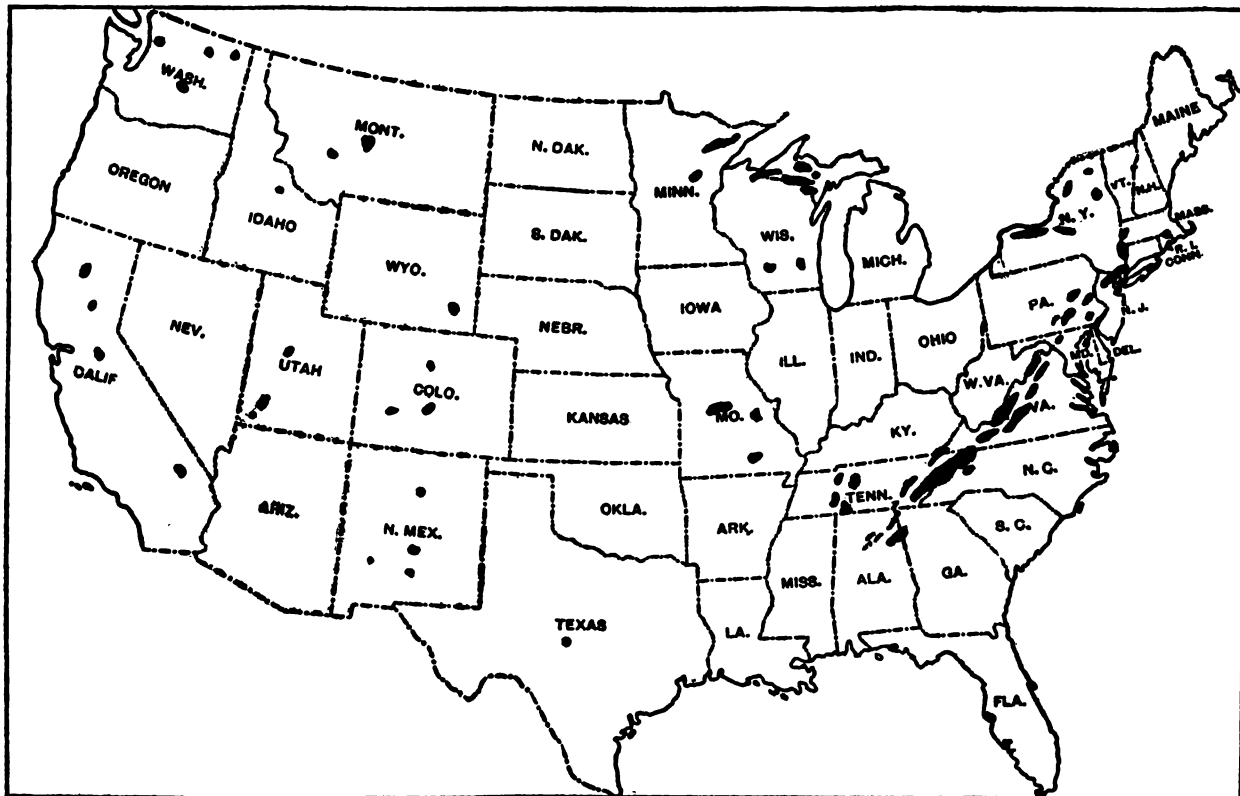
As measured by the average number of wage earners and by value of products, iron-ore mining ranked third among the mining industries in the United States, being outranked only by coal mining and petroleum and natural-gas production. The average number of wage earners employed in producing iron-ore mining enterprises constituted 4.7 per cent of the total average number of wage earners (981,560) in producing mining enterprises in the United States. The total value of all products reported by the iron-ore mining industry was \$218,217,905, which was 6.9 per cent of the total value of products of all mining industries in the United States (\$3,158,463,966) in 1919.

Table 3 also shows that the nonproducing mines, which were operated as separate enterprises, represented a very small part of the iron-ore mining industry. The average number of wage earners employed was only 1.3 per cent of the number employed in all iron-ore mining enterprises and the expenditures for development work by nonproducing enterprises amounted to less than one-fifth of corresponding expenditures by producing enterprises, and less than 2 per cent of the aggregate expenditures reported for all mining operations in the industry.

**GEOGRAPHIC DISTRIBUTION.**

**Iron-ore mining regions.**—The iron-ore producing states in 1919 were Connecticut and Massachusetts in the New England division of the United States; New York, New Jersey, and Pennsylvania in the Middle Atlantic division; Michigan and Wisconsin in the East North Central division; Minnesota and Missouri in the West North Central division; Maryland, Virginia, North Carolina, and Georgia in the South Atlantic division; Tennessee and Alabama in the East South Central division; Arkansas and Texas in the West South Central division; Idaho, Montana, Wyoming, New Mexico, and Utah in the Mountain division; and Washington and California in the Pacific division. The principal localities productive in recent years are shown by the map below, which does not, however, show all the iron-ore resources of the United States. Except for the leading states, statistics can not be shown by states without disclosure of individual operations, and groupings or combinations of states are necessary for adequate presentation of the statistics. Special grouping by geographic divisions is required for presentation of statistics for states or parts of states related by varieties of ore produced, and by mining and industrial conditions. Statistics so presented by mining districts are of more general interest and of greater importance than statistics presented by individual states.

**PRINCIPAL IRON-ORE PRODUCING LOCALITIES.**



The principal mining districts are as follows: The Lake Superior district, comprising all the mines in Minnesota and Michigan and those in northern Wisconsin; the Birmingham district in north central Alabama; the Chattanooga district in eastern Tennessee, western North Carolina, northwestern Georgia, and northeastern Alabama; the Adirondack district in northern New York; and the northern New Jersey-southeastern New York district. The statistics compiled by the United States Geological Survey on iron ore mined showing the varieties of ores are presented separately for these districts in Table 4.

TABLE 4.—QUANTITY OF IRON ORE MINED BY VARIETIES: 1919.<sup>1</sup>

DISTRICT.	Total (tons, 2,240 pounds).	Hematite (tons, 2,240 pounds).	Brown ore (tons, 2,240 pounds).	Magnetite (tons, 2,240 pounds).
United States.....	60,965,418	*57,719,582	1,127,397	*2,118,439
Lake Superior <sup>2</sup> .....	52,392,339	52,392,339	.....	.....
Birmingham.....	4,531,032	4,283,167	277,865	.....
Chattanooga.....	546,938	350,116	196,822	.....
Adirondack.....	740,315	.....	.....	740,315
Northern New Jersey and southeastern New York.....	491,458	.....	.....	491,458
Other districts.....	2,263,336	*723,960	652,710	*886,666

<sup>1</sup> U. S. Geological Survey, Mineral Resources of the United States, 1919.

<sup>2</sup> Some magnetite included with hematite.

<sup>3</sup> Includes only those mines in Wisconsin that are in the true Lake Superior district.

As the census statistics can not be shown for parts of some states, presentation by mining districts is not possible, but in order to approximate the ideal presentation, and to make as logical groupings as possible, the statistics are given by regions, as follows:

1. The Lake Superior Region, including all mines in Minnesota, Michigan, and Wisconsin. This is, except for a few mines in southern Wisconsin, identical with the Lake Superior district.

2. The Northeastern Region, including Connecticut, Massachusetts, New York, New Jersey, and Pennsylvania. This region is a combination of the Adirondack district, the northern New Jersey-southeastern New York district, and the western New York district with Pennsylvania, and the New England states.

3. The Southeastern Region, including Alabama, Georgia, Maryland, North Carolina, Virginia, and Tennessee. This is the Chattanooga district and the Birmingham district combined with Virginia and western Tennessee, in which production is important, and with Maryland, in which production is insignificant.

4. The Central Region, including Arkansas, Missouri, and Texas.

5. The Western Region, including California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming.

**Rank of regions and states.**—Table 5 presents for producing enterprises the average number of wage earners and the value of products for each of the regions and selected states, and gives the per cent distribution of wage earners and value of products. The predominance of the Lake Superior Region in iron-ore mining is shown conspicuously in this table. Minnesota and Michigan, the two leading iron-ore producing states in the United States, employed 70.8 per cent of the average number of wage earners in the iron-ore mining industry and produced 86.7 per cent of the total value of products of the industry. The Southeastern Region, including the Birmingham dis-

trict in Alabama, was second in importance, and Alabama ranked third among the iron-ore producing states. The Northeastern Region was third in importance, and New York, the leading state in the region, ranked fourth in the United States.

TABLE 5.—MINING REGIONS AND STATES RANKED BY VALUE OF PRODUCTS, PRODUCING ENTERPRISES: 1919.

REGION AND STATE.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.
UNITED STATES.....	290	45,741	100.0	\$213,217,905	100.0
LAKE SUPERIOR REGION.....	180	33,541	73.3	193,110,738	88.5
Minnesota.....	89	16,236	35.5	128,377,174	58.8
Michigan.....	65	16,160	35.3	60,906,692	27.9
Wisconsin.....	6	1,145	2.5	3,826,872	1.8
SOUTHEASTERN REGION.....	88	8,324	18.2	14,824,021	6.8
Alabama.....	39	6,485	14.2	12,291,760	5.6
Virginia.....	21	623	1.4	1,196,127	0.5
Tennessee.....	12	824	1.8	826,118	0.4
Georgia.....	9	215	0.5	283,487	0.1
All other <sup>1</sup> .....	7	177	0.4	233,529	0.1
NORTHEASTERN REGION.....	19	3,160	6.9	3,636,226	1.6
New York.....	7	1,811	4.0	5,264,443	2.4
All other <sup>2</sup> .....	12	1,349	2.9	3,371,783	1.5
CENTRAL REGION <sup>3</sup> .....	10	188	0.4	303,948	0.1
WESTERN REGION <sup>4</sup> .....	13	528	1.2	1,342,972	0.6

<sup>1</sup> Includes enterprises in states as follows: Maryland, 1; North Carolina, 6.

<sup>2</sup> Includes enterprises in states as follows: Connecticut, 1; Massachusetts, 1; New Jersey, 5; Pennsylvania, 5.

<sup>3</sup> Includes enterprises in states as follows: Arkansas, 1; Missouri, 8; Texas, 1.

<sup>4</sup> Includes enterprises in states as follows: California, 1; Idaho, 1; Montana, 2; New Mexico, 5; Utah, 2; Washington, 1; Wyoming, 1.

Examination of Table 5 shows not only that the Lake Superior Region is by far the most important region but also that the scale of individual operations, as measured by the average number of wage earners per enterprise and the value of products per enterprise, were much larger there than elsewhere. There is also shown, in Table 11, that the use of mechanical power, as measured by the aggregate horsepower used per mine, was more extensive in the Lake Superior Region than in all other regions except the Northeastern Region, in which mines in New York outclassed all others in this respect.

The relative importance of the states in iron-ore mining is illustrated by the circular diagram 3, page 338, which shows the proportion of ore produced by each of the principal states in 1919.

#### PROGRESS OF THE INDUSTRY.

**Comparative summary for producing enterprises in the United States: 1889-1919.**—Table 6 presents for producing iron-ore mines in the United States as a whole, the principal statistics as reported at the Fourteenth Census and the three preceding censuses of mines and quarries. This table shows a large and rapid increase in iron-ore production. The total quantity of iron ore produced was more than four times as great in 1919 as in 1889. The production of ore more than doubled in the first period 1889-1902, increased by nearly one-half from 1902 to 1909 and by more than one-sixth from 1909 to 1919. A notable

feature of this table is the large increase from 1889 to 1909 in power used, and the small increase during the last decade. In contrast to these increases in quantity of product and in the use of mechanical power, are the small or moderate increases during the first two decades and the decrease during the last decade in the average number of wage earners employed.

It should be noted that the changes indicated by the statistics for the years 1909 and 1919 are not a fair measure of progress during the decade because, as

shown in Table 9, which presents the production of iron ore annually, the year 1919 was one of abnormal depression in the iron-ore mining industry.

The large increases from 1909 to 1919 in salaries and wages and cost of supplies and materials and of fuel and power and in the value of products are largely due to general price increases, and are not a measure of growth in the industry. The very large increase in taxes is due to the addition since 1909 of Federal and state income taxes and to state taxes on output and other special taxes.

TABLE 6.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919, 1909, 1902, AND 1889.

	1919	1909	1902	1889	PER CENT OF INCREASE. <sup>1</sup>		
					1909-1919	1902-1909	1889-1902
Number of enterprises.....	200	300	332	( <sup>2</sup> )	-3.3	-10.7	.....
Number of mines.....	406	483	525	592	-15.9	-8.0	-11.3
Persons engaged.....	48,767	50,191	.....	.....	-2.8	.....	.....
Proprietors and firm members, total.....	41	76	( <sup>3</sup> )	( <sup>3</sup> )	.....	.....	.....
Number performing manual labor.....	9	24	( <sup>3</sup> )	( <sup>3</sup> )	.....	.....	.....
Salaried employees.....	2,985	2,870	2,405	520	4.0	19.3	362.3
Wage earners (average number).....	45,741	47,245	38,851	37,707	-3.2	21.6	3.0
Wage earners, Dec. 15, total.....	47,740	52,230	( <sup>3</sup> )	( <sup>3</sup> )	-8.6	.....	.....
Above ground.....	19,060	24,839	15,789	17,999	-23.5	57.8	-12.4
Below ground.....	28,680	27,341	23,062	19,708	4.9	18.4	17.1
Power used (aggregate horsepower).....	370,899	346,534	119,558	57,976	7.0	189.8	.....
Capital.....	\$501,396,044	\$300,735,917	( <sup>3</sup> )	\$109,766,199	66.7	.....	.....
Principal expenses:							
Salaries.....	\$6,986,660	\$3,389,962	\$2,113,230	\$529,043	104.6	61.4	299.4
Wages.....	\$75,713,459	\$29,731,456	\$21,531,722	\$13,880,108	154.7	38.1	55.1
Contract work.....	\$1,671,733	\$2,698,842	\$425,292	\$1,575,010	-38.1	584.6	-73.0
Supplies and materials.....	\$27,187,832	\$12,597,428	\$9,006,606	\$4,998,968	115.8	.....	.....
Fuel and purchased power.....	\$10,294,589	\$4,632,289	( <sup>3</sup> )	( <sup>3</sup> )	122.2	.....	.....
Royalties and rents.....	\$24,944,936	\$15,174,735	\$6,503,908	( <sup>3</sup> )	64.4	133.3	.....
Taxes.....	\$30,829,610	\$8,970,355	( <sup>3</sup> )	( <sup>3</sup> )	676.5	.....	.....
Value of all products.....	\$218,217,905	\$109,881,000	\$65,465,321	\$33,351,978	98.6	67.8	96.3
Quantity of iron ore produced (tons, 2,240 pounds).....	61,173,254	51,947,129	35,567,410	14,518,041	17.8	46.1	145.0

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100, or where figures are not comparable.  
<sup>2</sup> See "Thirteenth Census of the United States—Mines and Quarries, Vol. XI," page 344.  
<sup>3</sup> Not reported.  
<sup>4</sup> Average number.  
<sup>5</sup> Horsepower for steam boilers only.  
<sup>6</sup> Includes cost of fuel.  
<sup>7</sup> Comparable figures not available.

Comparative summary for producing enterprises, by regions and states: 1919 and 1909.—Table 7 presents for producing iron-ore mining enterprises, by regions and states, the principal comparable statistics for 1909 and 1919. The table shows that the principal increases were in the Lake Superior Region and in particular in Michigan and Minnesota. In this region and in these states there was an increase in the number of mines operated in contrast to decrease in the number operated in other important regions and states. The increase in iron ore produced in the United States was

practically all accounted for by increase in the Lake Superior Region. Alabama was the only state outside that region which showed an increase in ore produced. In the Lake Superior Region and in the states of Michigan and Minnesota there was a small increase in wage earners as compared with a considerable increase in quantity of production and very large increase in value of products; whereas in Alabama there was a larger increase in wage earners and only a small increase in quantity of production and very large increase in value of products.

TABLE 7.—COMPARATIVE STATISTICS, BY REGIONS AND STATES, PRODUCING ENTERPRISES: 1919 AND 1909.

REGION AND STATE.	Census year.	Number of enterprises.	Number of mines.	Wage earners (average number).	EXPENSES OF OPERATION AND DEVELOPMENT.				Total value of all products.	Iron ore produced (tons, 2,240 pounds).	Average value per ton. <sup>3</sup>	Power used (aggregate horsepower).
					Salaries and wages.	Supplies and materials. <sup>1</sup>	Royalties and rents.	Contract work.				
UNITED STATES.....	1919	290	406	45,741	\$82,650,119	\$37,482,421	\$24,944,936	\$1,671,788	\$218,217,905	61,173,264	3.56	370,869
	1909	300	483	47,245	33,121,418	17,229,717	15,174,735	2,698,842	109,881,000	51,947,139	2.12	346,534
		-3.3	-15.9	-3.2	149.5	117.5	64.4	-38.1	98.6	17.8	67.9	7.0
LAKE SUPERIOR REGION.....	1919	160	249	33,541	67,840,766	30,381,029	24,408,670	1,499,799	193,110,738	52,731,925	3.66	285,215
	1909	97	195	31,228	25,236,687	13,901,022	14,784,131	2,613,823	94,104,000	42,096,627	2.24	262,470
			27.7	7.4	168.8	118.6	65.1	-42.6	108.2	25.3	63.4	8.7
Michigan.....	1919	65	100	16,160	34,567,629	11,283,720	6,598,825	23,580	60,906,692	15,410,494	3.94	142,559
	1909	44	83	14,989	11,764,937	4,909,979	3,827,852	436,148	32,380,000	11,992,693	2.70	108,427
				7.8	193.8	129.8	72.4	-94.6	88.1	28.5	45.9	31.5
Minnesota.....	1919	89	141	16,286	31,284,342	18,885,513	17,532,030	1,444,266	123,377,174	36,268,463	3.54	135,924
	1909	46	101	14,978	12,530,232	8,548,861	10,686,407	2,157,075	58,588,000	29,127,918	2.02	145,068
			39.6	8.4	149.7	115.1	64.1	-33.0	118.2	24.5	75.2	-6.3
Wisconsin.....	1919	6	8	1,145	1,988,795	711,796	277,815	31,963	3,826,872	1,062,948	3.60	6,732
	1909	7	11	1,261	941,498	442,182	269,872	20,600	2,896,000	975,016	2.96	8,975
				-9.2	111.2	1.0	2.9	55.2	32.6	9.0	21.6	-25.0
SOUTHEASTERN REGION.....	1919	88	110	8,824	9,258,068	3,329,964	229,902	74,498	14,824,021	5,770,908	2.57	44,828
	1909	133	191	10,815	4,900,737	1,771,757	288,196	7,040	3,488,000	6,555,170	1.29	48,724
			-42.4	-19.3	88.9	87.9	-20.2	958.2	74.6	-12.0	99.2	-8.0
Alabama.....	1919	39	48	6,485	7,546,269	2,548,666	144,631	74,498	12,291,760	5,068,085	2.48	36,890
	1909	41	52	5,176	3,022,435	1,100,591	90,190	5,700	5,291,000	4,687,468	1.15	31,538
				25.3	148.7	181.6	60.4	1,207.0	128.0	7.8	111.3	18.9
Georgia.....	1919	9	9	215	148,637	77,924	17,714	.....	283,487	71,224	3.98	1,150
	1909	13	18	507	191,428	75,190	18,468	.....	331,000	219,976	1.50	3,496
				-57.6	-23.4	3.6	-4.1	.....	-14.4	-67.6	168.3	-67.1
Tennessee.....	1919	12	24	824	636,846	231,697	16,084	.....	829,118	292,968	2.91	3,659
	1909	19	46	1,395	583,877	181,175	28,085	.....	818,000	649,394	1.26	5,581
				-40.9	9.1	37.9	-42.7	.....	1.4	-55.4	131.0	-34.4
Virginia.....	1919	21	22	623	714,685	290,122	47,777	.....	1,186,127	304,524	3.90	2,304
	1909	44	58	2,772	900,756	325,242	148,130	945	1,692,000	841,709	2.01	6,458
				-77.5	-20.7	-10.8	-67.7	.....	-29.9	-63.8	94.0	-64.3
Other states <sup>4</sup> .....	1919	7	7	177	213,626	181,555	3,696	.....	233,529	59,135	3.94	825
	1909	16	17	465	202,231	89,559	3,343	395	256,000	156,628	1.68	1,351
				-61.9	5.6	102.7	10.6	.....	-8.8	-62.2	141.7	-33.9
NORTHEASTERN REGION.....	1919	19	21	3,160	4,575,181	3,312,470	277,625	79,730	3,636,226	1,914,967	4.46	36,493
	1909	45	54	4,905	2,354,088	1,266,225	78,019	76,890	6,284,000	2,463,319	2.52	33,261
				-34.2	94.4	163.3	280.2	3.7	37.4	-23.2	77.0	9.7
New York.....	1919	7	7	1,811	2,680,350	1,938,590	91,890	44,778	5,284,443	868,995	6.00	21,172
	1909	14	19	2,082	1,140,235	766,814	62,668	20,632	3,741,000	1,238,720	3.02	22,520
				-13.0	135.1	158.1	46.6	117.0	40.7	-28.8	98.7	-6.0
Other states <sup>4</sup> .....	1919	12	14	1,349	1,894,831	1,368,880	185,765	34,952	3,371,783	1,045,972	3.19	15,321
	1909	31	35	2,723	1,212,853	501,411	10,351	56,248	2,545,000	1,264,599	2.03	10,741
				-50.5	56.1	171.0	1,694.7	-37.9	32.6	-16.6	57.1	42.6
CENTRAL REGION <sup>5</sup> .....	1919	10	10	188	191,811	120,947	16,334	15,000	308,948	74,371	4.08	1,223
	1909	18	24	243	115,067	25,531	12,033	1,000	213,000	93,585	2.28	403
				-22.6	66.7	373.7	34.7	1,273.1	42.7	-20.5	78.9	208.5
WESTERN REGION <sup>6</sup> .....	1919	13	16	528	784,298	338,011	12,405	2,666	1,342,972	681,085	1.96	3,110
	1909	7	9	654	514,849	278,182	17,356	.....	792,000	709,428	1.12	1,679
				-19.3	52.3	23.7	-28.5	.....	69.6	-4.0	75.0	85.6

<sup>1</sup> Includes cost of fuel and purchased power.

<sup>2</sup> Based on value of iron ore only.

<sup>3</sup> See "Thirteenth Census of the United States—Mines and Quarries, Vol. XI," page 344.

<sup>4</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

<sup>5</sup> Includes Maryland and North Carolina for 1919 and 1909, and also Kentucky and West Virginia for 1909.

<sup>6</sup> Includes Connecticut, Massachusetts, New Jersey, and Pennsylvania for 1919 and 1909, and also Ohio for 1909.

<sup>7</sup> Includes Arkansas, Missouri, and Texas for 1919 and Missouri and Texas for 1909.

<sup>8</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming for 1919 and Colorado, Nevada, Utah, New Mexico, and Wyoming for 1909.

**Population and iron-ore production: 1879-1919.**—In Table 8 the growth of population is compared with the increase in output of iron ore during the period from 1879 to 1919. This table shows larger increases in the production of iron ore than in population during the three decades 1879-1909. In that period the tons produced per capita practically doubled each decade

from about one-eighth of a ton in 1879 to nearly one-quarter of a ton in 1889 and to over one-half of a ton in 1909.

The increase in iron-ore production in the last decade was only a little in advance of population, the iron ore produced per capita in 1919 being inappreciably more than in 1909.

TABLE 8.—COMPARATIVE GROWTH OF POPULATION AND IRON-ORE PRODUCTION.

YEAR.	POPULATION. <sup>1</sup>		IRON-ORE PRODUCTION.		
	Number.	Per cent of increase over preceding census.	Quantity (tons, 2,240 pounds).	Per cent of increase over preceding census.	Tons per capita.
1879.....	50,155,783	.....	6,307,883	.....	0.13
1889.....	62,947,714	23.5	14,518,041	130.2	0.23
1909.....	91,972,266	46.1	61,947,129	257.8	0.66
1919.....	105,710,620	14.9	61,178,254	17.8	0.58

<sup>1</sup> Population is for the year following that covered by the statistics for iron ore.

Production of iron ore, by states: 1879-1920.—Table 9, compiled from the reports of the United States Geological Survey, shows the production of iron ore in the United States in 1879, 1889, and annually thereafter. The growth of the industry as shown by the data presented in this table is displayed graphically by the curve in the accompanying diagram, which shows the production of iron ore in the United States, in the Lake Superior Region, in the Southern states, Alabama and Tennessee, and in "All other states," from year to year.

TABLE 9.—PRODUCTION OF IRON ORE: 1879 TO 1920.<sup>1</sup>

YEAR.	IRON ORE MINED (THOUSANDS OF TONS <sup>2</sup> ).										
	United States.	Minnesota.	Michigan.	Wisconsin.	Alabama.	Tennessee.	New York.	Pennsylvania.	New Jersey.	All other states.	
1879.....	7,120	.....	1,641	37	171	98	1,127	1,951	676	1,424	
1880.....	14,518	865	5,856	337	1,570	473	1,248	1,560	416	1,698	
1890.....	16,036	892	7,142	949	1,898	466	1,253	1,362	496	1,578	
1891.....	14,591	945	6,127	589	1,987	544	1,017	1,273	526	1,583	
1892.....	16,297	1,255	7,544	790	2,312	407	891	1,084	465	1,549	
1893.....	11,588	1,500	4,668	439	1,742	373	534	996	356	1,278	
1894.....	11,890	2,968	4,419	348	1,493	293	243	532	277	1,307	
1895.....	15,958	3,266	5,512	649	2,199	630	307	900	282	1,423	
1896.....	16,006	4,284	5,707	607	2,042	535	385	748	285	1,432	
1897.....	17,518	5,901	6,087	554	2,099	604	336	724	254	1,259	
1898.....	19,434	5,964	7,347	510	2,402	598	180	773	275	1,390	
1899.....	24,633	8,161	9,146	580	2,663	632	444	1,009	256	1,792	
1900.....	27,553	9,534	9,927	746	2,759	594	441	878	344	2,030	
1901.....	28,837	11,110	9,654	739	2,822	739	420	1,041	402	1,930	
1902.....	35,564	15,138	11,135	784	3,574	875	555	823	442	2,228	
1903.....	35,019	15,371	10,600	675	3,685	853	540	645	485	2,165	
1904.....	27,644	12,729	7,090	483	3,709	501	842	397	500	1,402	
1905.....	42,526	21,735	10,886	859	3,733	735	1,140	809	526	2,053	
1906.....	47,750	25,364	11,823	848	3,995	871	1,042	949	543	2,315	
1907.....	51,721	28,970	11,830	839	4,039	814	1,375	837	550	2,467	
1908.....	35,983	18,652	8,839	734	3,734	635	697	443	395	1,854	
1909.....	51,294	28,975	11,900	1,068	4,321	658	1,015	667	544	2,146	
1910.....	67,015	31,967	13,304	1,150	4,801	732	1,287	740	522	2,512	
1911.....	45,877	24,645	10,329	699	3,828	464	1,061	538	466	1,847	
1912.....	55,150	34,432	11,191	860	4,564	417	1,217	517	365	1,587	
1913.....	61,980	33,659	12,841	1,018	5,216	370	1,460	489	325	1,602	
1914.....	41,440	21,947	10,796	837	4,839	330	786	406	350	1,099	
1915.....	55,526	33,465	12,515	1,095	5,309	284	999	363	415	1,081	
1916.....	75,168	44,585	18,071	1,305	6,748	456	1,343	559	493	1,606	
1917.....	75,299	44,595	17,869	1,202	7,038	508	1,304	547	490	1,736	
1918.....	69,658	41,954	16,899	1,089	5,755	409	906	523	423	1,700	
1919.....	60,965	36,001	15,439	1,087	5,053	284	871	627	404	1,199	
1920.....	67,604	39,453	17,511	981	5,894	375	920	734	432	1,304	

<sup>1</sup> U. S. Geological Survey, Mineral Resources of the United States.  
<sup>2</sup> Tons of 2,240 pounds.

DIAGRAM 1.—PRODUCTION OF IRON ORE, UNITED STATES AND PRINCIPAL PRODUCING REGIONS: 1879-1920.

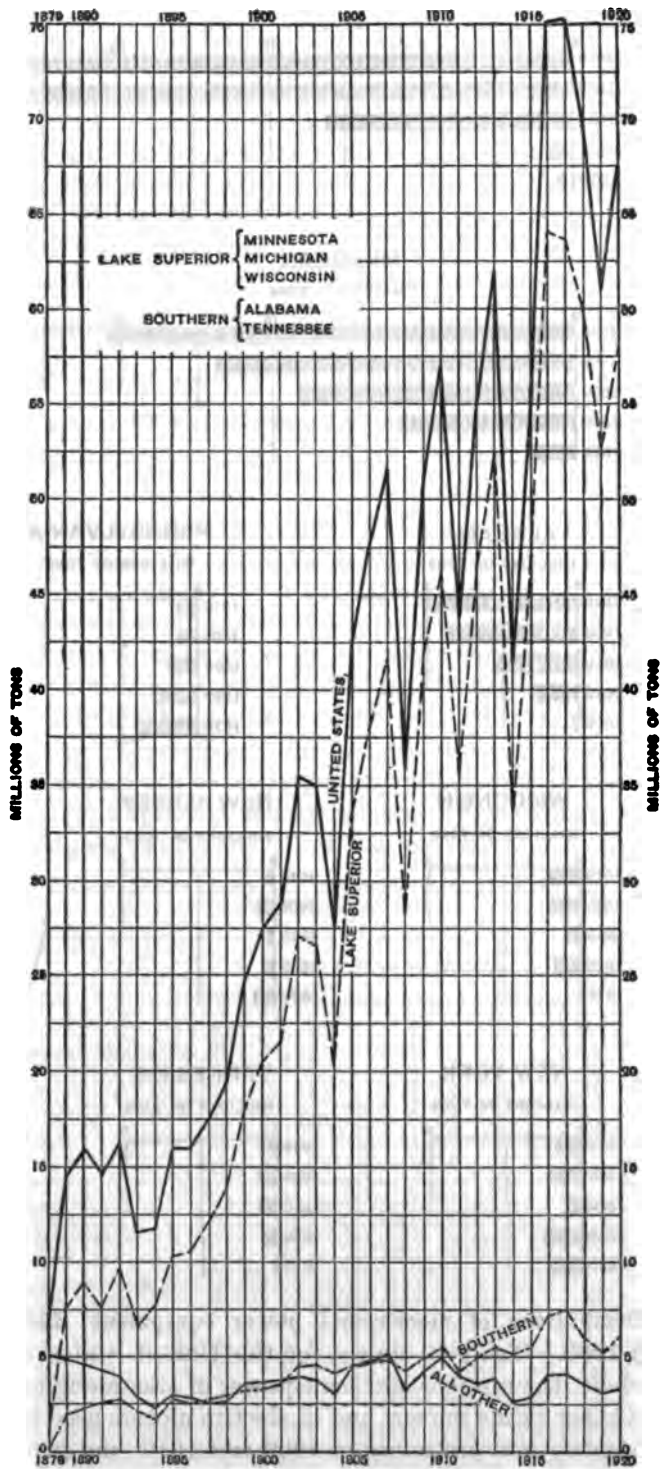


Diagram 2, on page 338, shows by relative length of bars the growth of production of iron ore in the principal states, by decennial periods 1879-1919.



MINES AND QUARRIES.

DIAGRAM 2.—PRODUCTION OF IRON ORE, BY PRINCIPAL STATES: 1919, 1909, 1899, 1889, AND 1879.

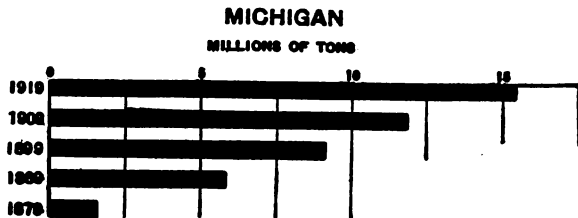
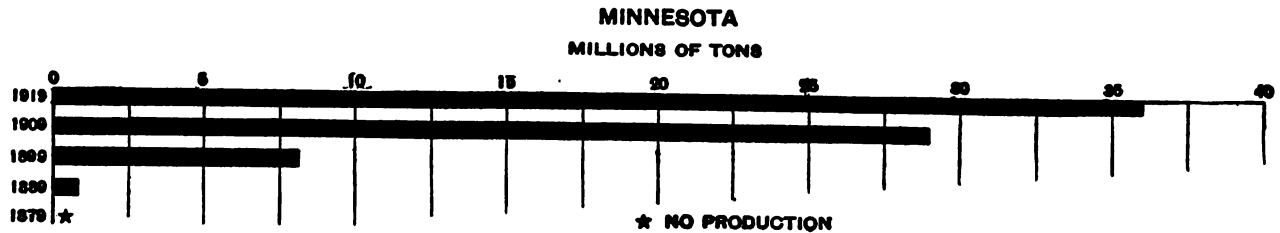
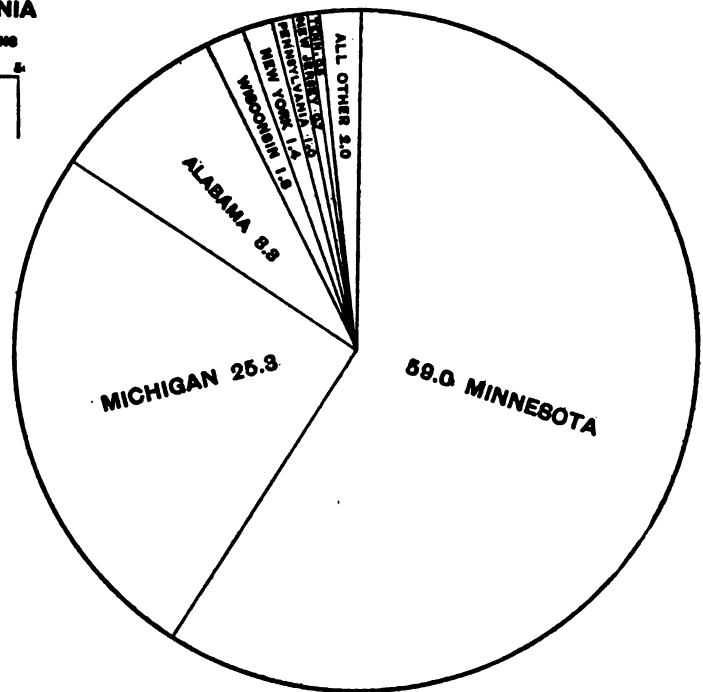
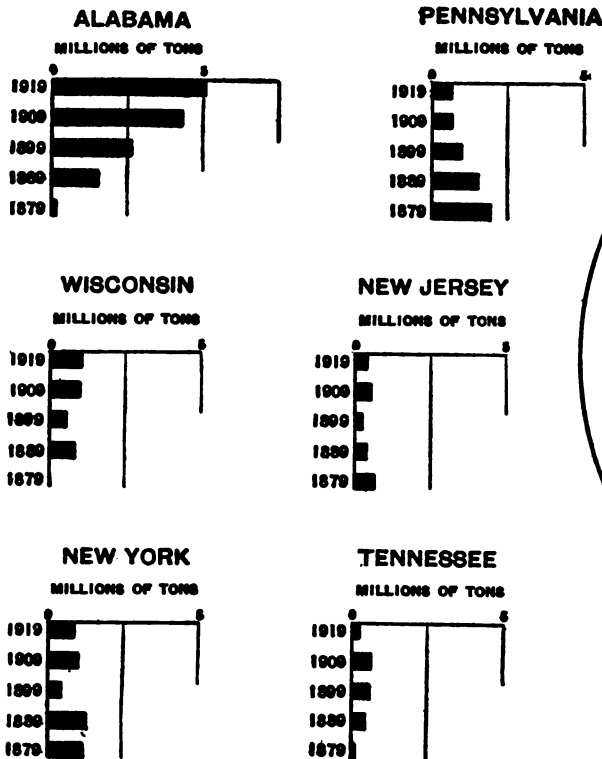


DIAGRAM 3.—PER CENT OF PRODUCTION OF IRON ORE, BY STATES: 1919.



Comparison of mechanical power equipment: 1919 and 1909.—Table 10 shows, for the United States as a whole, the number and horsepower of steam engines and other prime movers and of electric motors used by producing iron-ore mines in 1909 and 1919, and gives the per cent of increase for 1919 as compared with 1909.

The table shows a slight increase in the aggregate horsepower of equipment used; a large decrease, both absolute and relative, in the total horsepower of prime movers used; and large increases in the number and horsepower of electric motors used. The extraordinary increase in electric motors operated by purchased power more than offset the decrease in prime movers. The statistics show a marked advance during the decade in the use of electrically driven equipment.

TABLE 10.—COMPARATIVE STATISTICS, POWER USED, PRODUCING ENTERPRISES: 1919 AND 1909.

	1919	1909	Per cent of increase. <sup>1</sup>
Power used: Aggregate horsepower.....	370, 869	346, 534	7.0
Prime movers (horsepower, total).....	273, 477	342, 069	-20.1
Steam engines—			
Number.....	2, 358	3, 563	-33.8
Horsepower.....	259, 705	326, 753	-20.5
Internal-combustion engines—			
Number.....	45	27	103.6
Horsepower.....	5, 397	2, 651	103.6
Water wheels and turbines—			
Number.....	22	20	—
Horsepower.....	8, 375	12, 665	-33.9
Equipment operated by purchased power—			
Electric motors—			
Number.....	1, 341	55	—
Horsepower.....	97, 392	4, 465	2, 081.2
Electric motors run by current generated by the enterprise reporting:			
Number.....	1, 112	326	241.1
Horsepower.....	67, 595	13, 295	406.4

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.  
<sup>2</sup> Includes 10 horsepower reported for equipment other than electric motors.

Table 11 compares for 1919 and 1909 for producing iron mines in the United States and for regions and selected states, the horsepower used per mine, per thousand tons of iron ore produced, and per wage earner.

TABLE 11.—POWER USED BY PRODUCING ENTERPRISES, PER MINE, PER WAGE EARNER, AND PER THOUSAND TONS OF ORE PRODUCED: 1919 AND 1909.

REGION AND STATE.	Number of mines.	Iron ore produced (tons, 2,240 pounds).	Wage earners (average number).	POWER USED (AGGREGATE HORSEPOWER).			
				Total.	Per mine.	Per 1,000 tons of iron ore produced.	Per wage earner.
UNITED STATES.....1919..	406	61,173,254	45,741	370,869	913	6.1	8.1
.....1909..	483	51,947,129	47,245	346,534	717	6.7	7.3
Per cent of increase <sup>1</sup> .....				7.0	27.3	-9.0	11.0
LAKE SUPERIOR REGION.....1919..	249	52,731,925	33,541	235,215	1,145	5.4	8.5
.....1909..	195	42,065,627	31,228	262,470	1,346	6.2	8.4
Per cent of increase <sup>1</sup> .....				8.7	-14.9	-12.9	1.2
Michigan.....1919..	100	15,410,494	16,160	142,559	1,426	9.3	8.8
.....1909..	83	11,902,693	14,989	108,427	1,306	9.0	7.2
Per cent of increase.....				31.5	9.2	3.3	22.2
Minnesota.....1919..	141	36,268,483	16,236	125,324	964	3.7	8.4
.....1909..	101	29,127,918	14,978	145,068	1,436	5.0	9.7
Per cent of increase <sup>1</sup> .....				-6.3	-32.9	-26.0	-13.4
Wisconsin.....1919..	8	1,062,948	1,145	6,732	842	6.3	5.9
.....1909..	11	975,016	1,261	8,975	816	9.2	7.1
Per cent of increase <sup>1</sup> .....				-25.0	3.1	-31.5	-16.9
SOUTHEASTERN REGION.....1919..	110	5,770,906	8,324	44,828	408	7.8	5.4
.....1909..	191	6,555,170	10,315	48,724	255	7.4	4.7
Per cent of increase <sup>1</sup> .....				-8.0	59.6	5.4	14.9
Alabama.....1919..	48	5,053,035	6,495	36,890	768	7.3	5.7
.....1909..	52	4,687,468	5,176	31,538	612	6.8	6.2
Per cent of increase <sup>1</sup> .....				15.9	25.5	7.4	-8.1
Georgia.....1919..	9	71,324	215	1,150	128	16.1	5.3
.....1909..	18	219,976	507	3,496	194	15.9	6.9
Per cent of increase <sup>1</sup> .....				-67.1	-34.0	1.2	-23.2
Tennessee.....1919..	24	282,988	824	3,659	152	12.9	4.4
.....1909..	46	649,394	1,395	6,581	121	8.6	4.0
Per cent of increase <sup>1</sup> .....				-34.4	25.6	50.0	10.0
Virginia.....1919..	22	304,824	623	2,304	104	7.6	3.7
.....1909..	58	841,709	2,772	6,458	111	7.7	2.3
Per cent of increase <sup>1</sup> .....				-64.3	-6.3	-1.3	60.9
NORTHEASTERN REGION.....1919..	21	1,914,967	3,160	36,493	1,738	19.1	11.5
.....1909..	54	2,493,319	4,805	33,261	616	13.3	6.9
Per cent of increase.....				9.7	182.1	43.6	66.7
New York.....1919..	7	868,995	1,811	21,172	3,025	24.4	11.7
.....1909..	19	1,238,720	2,082	22,520	1,185	18.2	10.8
Per cent of increase <sup>1</sup> .....				-6.0	155.3	34.0	8.3
CENTRAL REGION <sup>3</sup> .....1919..	10	74,371	188	1,223	122	16.4	6.5
.....1909..	34	93,585	243	403	12	4.3	1.7
Per cent of increase.....				203.5	916.7	281.4	282.4
WESTERN REGION <sup>4</sup> .....1919..	16	681,065	528	3,110	194	4.6	5.9
.....1909..	9	709,428	654	1,676	186	2.4	2.6
Per cent of increase.....				85.6	4.3	91.7	126.9

<sup>1</sup> A minus sign (-) denotes decrease.  
<sup>2</sup> All crude ore, and therefore not entirely comparable with figures for 1919 which are for concentrates chiefly.  
<sup>3</sup> Includes Arkansas, Missouri, and Texas for 1919 and Missouri and Texas for 1909.  
<sup>4</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming for 1919 and Colorado, Nevada, Utah, New Mexico, and Wyoming for 1909.

The table shows that while there was small increase in the total horsepower used by all mines there was considerable increase, 27.3 per cent, in the horsepower per mine throughout the United States. In the Lake Superior Region there was a decrease in the horsepower used per mine due to the decrease in the horsepower reported per mine in Minnesota. In each of the other regions taken as a whole there was increase in the horsepower per mine. The figures for the United States

as a whole show a relatively small decrease during the decade in the horsepower per thousand tons of ore mined, and excepting New York and Tennessee, where there was large increase, and Minnesota and Wisconsin, where there was notable decrease, the states in the principal regions show little change in this respect. The horsepower per wage earner employed increased slightly for the United States as a whole, but increased and decreased variously in different states. The range in horsepower per wage earner employed in the leading states was from 3.7 to 11.7 in 1919 and 2.3 to 10.8 in 1909. New York and Virginia were the states showing the maximum and minimum horsepower per wage earner, respectively, in both 1919 and 1909.

CHARACTER OF ORGANIZATION.

Enterprises operating iron-ore mines in 1919 are classified according to character of organization in Table 12. The table shows for the United States as a whole and for each of the mining regions the number of enterprises operated by corporations and by other forms of organization and gives for each class the average number of wage earners employed and the value of the products. In order to avoid disclosure of individual operations these data are not given by states. Throughout the United States corporations conducted the most important enterprises in the industry, employed nearly all the wage earners, and produced practically all of the iron ore mined.

TABLE 12.—CHARACTER OF ORGANIZATION, PRODUCING ENTERPRISES: 1919.

REGION AND CHARACTER OF ORGANIZATION.	Number of enterprises.	Wage earners (average number).	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Amount.	Per enterprise.	Enterprises.	Wage earners (average number).	Value of products.
UNITED STATES.....	290	45,741	\$218,217,905	\$752,476	100.0	100.0	100.0
Corporation.....	267	45,152	216,713,313	811,681	92.1	98.7	99.3
Individual <sup>1</sup> .....	13	421	1,064,996	81,222	4.5	0.9	0.5
Firm.....	10	168	434,106	43,411	3.4	0.4	0.2
LAKE SUPERIOR REGION.....	160	33,541	193,110,739	1,206,942	100.0	100.0	100.0
Corporation.....	156	33,359	192,595,121	1,234,520	97.5	99.5	99.7
Individual <sup>2</sup> .....	4	182	525,617	181,404	2.5	0.5	0.3
SOUTHEASTERN REGION.....	88	8,324	14,824,021	168,455	100.0	100.0	100.0
Corporation.....	78	8,209	14,701,757	188,484	88.6	98.6	99.2
Individual.....	7	98	36,399	12,198	8.0	1.2	0.6
Firm.....	3	17	36,375	12,292	3.4	0.2	0.2
NORTHEASTERN REGION.....	19	3,160	8,636,226	454,638	100.0	100.0	100.0
Corporation.....	16	2,892	7,817,571	488,698	84.2	91.5	90.5
Individual <sup>3</sup> .....	3	268	818,655	272,885	15.8	8.5	9.5
CENTRAL REGION.....	10	188	303,948	30,395	100.0	100.0	100.0
Corporation <sup>4</sup> .....	10	188	303,948	30,395	100.0	100.0	100.0
WESTERN REGION.....	13	528	1,342,972	103,306	100.0	100.0	100.2
Corporation.....	9	511	1,313,791	145,977	69.2	96.8	97.8
Firm.....	4	17	29,181	7,295	30.8	3.2	2.0

<sup>1</sup> Includes 1 other form of organization.  
<sup>2</sup> Includes 1 firm.  
<sup>3</sup> Includes 1 firm and 1 other form of organization.  
<sup>4</sup> Includes 2 small enterprises operated by a firm and an individual.

SCALE OF OPERATION.

Size of enterprises according to value of products.—In Table 13 producing enterprises in the iron-ore mining industry in 1919 are classified according to the value of

their products and the percentage distribution for each class is given. The table shows that 38 enterprises, or 13.1 per cent of the total, had products valued at over \$1,000,000 each and reported 73 per cent of the total value of products of the industry. Thirty-three of these 38 enterprises were in the Lake Superior Region and the value of their products, averaging between \$4,000,000 and \$5,000,000 each, amounted to 76.7 per cent of the total value of the products of the region and 68 per cent of the value of products of the United

States. In the Lake Superior Region a majority of the enterprises were in classes having products valued at less than \$500,000, but the value of products of these classes was only 11.2 per cent of the total for the region. In the Northeastern Region enterprises in the class having products valued at more than \$500,000 accounted for 82.6 per cent of the total value of products for the region, whereas the smaller enterprises, which were more numerous, accounted for only 17.4 per cent.

TABLE 13.—SIZE OF PRODUCING ENTERPRISES, BY VALUE OF PRODUCTS: 1919.

REGION, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.		REGION, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.	
	Number.	Per cent distribution.	Amount.	Per cent distribution.		Number.	Per cent distribution.	Amount.	Per cent distribution.
<b>UNITED STATES</b> .....	290	100.0	\$218,217,905	100.0	<b>SOUTHEASTERN REGION—Con.</b>				
Less than \$5,000.....	15	5.2	36,040	( <sup>1</sup> )	<b>VIRGINIA</b> .....	21	100.0	\$1,186,127	100.0
\$5,000 to \$20,000.....	29	10.0	392,775	0.2	Less than \$20,000 <sup>2</sup> .....	7	33.3	76,162	6.4
\$20,000 to \$100,000.....	69	23.8	3,774,321	1.7	\$20,000 to \$100,000.....	11	52.4	708,982	59.8
\$100,000 to \$500,000.....	98	33.8	26,458,784	12.1	\$100,000 to \$500,000.....	3	14.3	400,968	33.8
\$500,000 to \$1,000,000.....	41	14.1	28,239,920	12.9	<b>TENNESSEE</b> .....	12	100.0	829,118	100.0
\$1,000,000 and over <sup>3</sup> .....	38	13.1	169,821,065	73.0	Less than \$20,000 <sup>2</sup> .....	4	33.3	45,998	5.3
					\$20,000 and over <sup>4</sup> .....	8	66.6	786,120	94.7
<b>LAKE SUPERIOR REGION</b> .....	160	100.0	193,110,738	100.0	<b>GEORGIA</b> .....	9	100.0	268,487	100.0
Less than \$20,000 <sup>5</sup> .....	7	4.4	74,838	( <sup>1</sup> )	Less than \$100,000 <sup>6</sup> .....	9	100.0	268,487	100.0
\$20,000 to \$100,000.....	18	11.2	1,102,297	0.6	<b>NORTH CAROLINA AND MARYLAND</b> .....				
\$100,000 to \$500,000.....	69	43.1	20,665,197	10.6	Less than \$5,000.....	4	57.1	6,853	2.9
\$500,000 to \$1,000,000.....	38	20.6	28,298,872	12.1	\$5,000 and over <sup>7</sup> .....	3	42.9	226,676	97.1
\$1,000,000 and over <sup>8</sup> .....	33	20.6	148,072,884	76.7	<b>NORTHEASTERN REGION</b> .....	19	100.0	8,636,226	100.0
<b>MINNESOTA</b> .....	60	100.0	128,377,174	100.0	Less than \$100,000 <sup>9</sup> .....	8	42.1	406,576	4.7
Less than \$20,000 <sup>5</sup> .....	5	8.6	51,770	( <sup>1</sup> )	\$100,000 to \$500,000.....	4	21.0	1,099,980	12.7
\$20,000 to \$100,000.....	9	10.1	552,437	0.4	\$500,000 and over <sup>10</sup> .....	7	36.8	7,136,670	82.6
\$100,000 to \$500,000.....	41	48.1	12,051,838	9.4	<b>NEW YORK</b> .....	7	100.0	5,264,443	100.0
\$500,000 to \$1,000,000.....	17	19.1	12,067,869	9.4	Less than \$20,000 <sup>11</sup> .....	4	57.1	590,418	11.2
\$1,000,000 and over <sup>8</sup> .....	17	19.1	108,654,060	80.7	\$20,000 to \$100,000.....	3	42.9	4,674,025	88.8
<b>MICHIGAN</b> .....	65	100.0	60,906,692	100.0	<b>CONNECTICUT, MASSACHUSETTS, NEW JERSEY, AND PENNSYLVANIA</b> .....	12	100.0	3,371,733	100.0
Less than \$100,000 <sup>12</sup> .....	10	15.4	474,111	0.8	Less than \$100,000 <sup>13</sup> .....	5	41.7	188,829	5.6
\$100,000 to \$500,000.....	26	40.0	7,920,426	13.0	\$100,000 and over <sup>14</sup> .....	7	58.3	3,182,904	94.4
\$500,000 to \$1,000,000.....	14	21.5	9,799,144	16.1	<b>CENTRAL REGION</b> <sup>15</sup> .....	10	100.0	303,948	100.0
\$1,000,000 and over <sup>16</sup> .....	15	23.1	42,713,011	70.1	Less than \$20,000 <sup>17</sup> .....	5	50.0	22,008	7.2
<b>WISCONSIN</b> .....	6	100.0	3,326,872	100.0	\$20,000 and over <sup>18</sup> .....	5	50.0	281,940	92.8
Less than \$500,000 <sup>19</sup> .....	3	50.0	692,050	18.1	<b>WESTERN REGION</b> <sup>19</sup> .....	13	100.0	1,342,972	100.0
\$500,000 and over <sup>20</sup> .....	3	50.0	3,134,822	81.9	Less than \$20,000 <sup>21</sup> .....	7	53.8	75,411	5.6
<b>SOUTHEASTERN REGION</b> .....	88	100.0	14,824,021	100.0	\$20,000 to \$100,000.....	3	23.1	162,050	12.1
Less than \$5,000.....	8	9.1	19,346	0.1	\$100,000 and over <sup>22</sup> .....	3	23.1	1,105,511	82.3
\$5,000 to \$20,000.....	16	18.2	231,330	1.6					
\$20,000 to \$100,000.....	37	42.0	1,971,340	13.3					
\$100,000 to \$500,000.....	22	25.0	4,126,947	27.8					
\$500,000 and over <sup>23</sup> .....	5	5.7	8,475,058	57.2					
<b>ALABAMA</b> .....	39	100.0	12,291,760	100.0					
Less than \$20,000 <sup>24</sup> .....	6	15.4	74,981	0.6					
\$20,000 to \$100,000.....	12	30.8	655,071	5.3					
\$100,000 to \$500,000.....	16	41.0	3,098,660	25.1					
\$500,000 and over <sup>25</sup> .....	5	12.8	8,475,058	68.9					

<sup>1</sup> Less than one-tenth of 1 per cent.  
<sup>2</sup> Includes the group "\$5,000,000 and over."  
<sup>3</sup> Includes the group "Less than \$5,000."  
<sup>4</sup> Includes the group "\$5,000 to \$20,000."  
<sup>5</sup> Includes the group "\$20,000 to \$100,000."  
<sup>6</sup> Includes the group "\$1,000,000 to \$5,000,000."  
<sup>7</sup> Includes the group "\$1,000,000 to \$5,000,000."

<sup>8</sup> Includes the group "\$100,000 to \$500,000."  
<sup>9</sup> Includes the groups "\$20,000 to \$100,000" and "\$100,000 to \$500,000."  
<sup>10</sup> Includes the group "\$500,000 to \$1,000,000."  
<sup>11</sup> Includes Arkansas, Missouri, and Texas.  
<sup>12</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming.

In the Southeastern Region only five enterprises were in the class having products valued at \$500,000 or more, but they contributed 57.2 per cent of the total value of products for the region. In this region alone of the three principal regions, the smaller enterprises furnished a relatively large share of the products.

Size of enterprises according to quantity of product.—Table 14 shows the producing enterprises in the iron-

ore mining industry, classified according to the quantity of ore produced, and gives the total output for each group.<sup>1</sup>

<sup>1</sup> It should be noted in connection with this table that the quantity of output per mine is not indicated, for the reason that enterprises as defined by the census may comprise the operations of several mines in any one state. Statistics on the number of tons of iron ore produced by individual mines reporting 50,000 tons or more annually are given in the U. S. Geological Survey's publication "Mineral Resources."

TABLE 14.—SIZE OF PRODUCING ENTERPRISES, BY QUANTITY OF PRODUCT: 1919.

REGION, STATE, AND QUANTITY OF PRODUCT PER ENTERPRISE (TONS, 2,240 POUNDS).	ENTERPRISES.		QUANTITY PRODUCED.		Average output per enterprise (tons, 2,240 pounds).	REGION, STATE, AND QUANTITY OF PRODUCT PER ENTERPRISE (TONS, 2,240 POUNDS).	ENTERPRISES.		QUANTITY PRODUCED.		Average output per enterprise (tons, 2,240 pounds).
	Num. ber.	Per cent distribution.	Iron ore (tons, 2,240 pounds).	Per cent distribution.			Num. ber.	Per cent distribution.	Iron ore (tons, 2,240 pounds).	Per cent distribution.	
<b>UNITED STATES</b> .....	<b>290</b>	<b>100.0</b>	<b>61,173,254</b>	<b>100.0</b>	<b>210,942</b>	<b>SOUTHEASTERN REGION—Con.</b>					
Less than 25,000.....	103	35.5	887,971	1.5	8,621	GEORGIA.....	9	100.0	71,224	100.0	7,914
25,000 to 50,000.....	34	11.7	1,262,155	2.1	37,122	Less than 25,000.....	9	100.0	71,224	100.0	7,914
50,000 to 100,000.....	45	15.5	3,516,475	5.7	78,144	<b>MARYLAND AND NORTH CAROLINA</b> .....	7	100.0	59,185	100.0	8,448
100,000 to 200,000.....	55	19.0	7,900,789	13.0	144,742	Less than 50,000 <sup>1</sup> .....	7	100.0	59,135	100.0	8,448
200,000 to 500,000.....	57	19.7	12,282,685	20.1	231,955	<b>TENNESSEE</b> .....	12	100.0	282,988	100.0	23,582
500,000 to 1,000,000.....	10	3.4	5,932,526	9.7	593,253	Less than 25,000.....	8	66.7	55,575	20.8	7,869
1,000,000 and over.....	6	2.1	29,330,706	47.9	4,898,451	25,000 to 200,000 <sup>2</sup> .....	4	33.3	224,113	79.2	56,028
<b>LAKE SUPERIOR REGION</b> .....	<b>160</b>	<b>100.0</b>	<b>52,731,925</b>	<b>100.0</b>	<b>329,575</b>	<b>VIRGINIA</b> .....	21	100.0	304,524	100.0	14,501
Less than 25,000.....	20	12.5	219,099	0.4	10,955	Less than 25,000.....	18	85.7	186,674	61.3	10,871
25,000 to 50,000.....	14	8.8	524,147	1.0	37,439	25,000 to 50,000.....	3	14.3	117,850	38.7	39,283
50,000 to 100,000.....	33	20.6	2,865,403	5.4	77,786	<b>NORTHEASTERN REGION</b> .....	19	100.0	1,914,967	100.0	100,788
100,000 to 200,000.....	47	29.4	6,858,600	13.0	145,926	Less than 25,000.....	7	36.8	71,829	3.8	10,262
200,000 to 500,000.....	33	20.6	10,718,293	20.3	324,797	25,000 to 100,000 <sup>3</sup> .....	7	36.8	455,780	23.8	65,111
500,000 and over <sup>1</sup> .....	13	8.1	31,846,453	60.4	2,449,729	100,000 to 1,000,000 <sup>4</sup> .....	5	26.8	1,387,358	72.4	277,472
<b>MICHIGAN</b> .....	<b>65</b>	<b>100.0</b>	<b>15,410,494</b>	<b>100.0</b>	<b>237,085</b>	<b>NEW YORK</b> .....	7	100.0	868,995	100.0	124,142
Less than 25,000.....	7	10.8	73,447	0.5	10,492	Less than 50,000 <sup>5</sup> .....	3	42.9	56,485	6.5	18,828
25,000 to 50,000.....	6	9.2	238,461	1.5	39,410	50,000 to 1,000,000 <sup>6</sup> .....	4	57.1	812,510	93.5	203,128
50,000 to 100,000.....	16	24.6	1,248,816	8.1	78,051	<b>CONNECTICUT, MASSACHUSETTS, NEW JERSEY, AND PENNSYLVANIA</b> .....	12	100.0	1,045,972	100.0	87,164
100,000 to 200,000.....	18	27.7	2,631,683	17.4	148,982	Less than 25,000.....	5	41.7	43,387	4.1	8,677
200,000 to 500,000.....	14	21.5	4,597,959	29.8	328,426	25,000 to 100,000 <sup>7</sup> .....	4	33.3	276,263	26.4	69,066
500,000 and over <sup>1</sup> .....	4	6.2	6,572,128	42.6	1,643,032	100,000 to 500,000 <sup>8</sup> .....	3	25.0	726,322	69.4	242,107
<b>MINNESOTA</b> .....	<b>39</b>	<b>100.0</b>	<b>36,258,483</b>	<b>100.0</b>	<b>407,399</b>	<b>CENTRAL REGION</b> <sup>9</sup> .....	10	100.0	74,871	100.0	7,437
Less than 25,000.....	13	14.6	145,652	0.4	11,204	Less than 50,000 <sup>4</sup> .....	10	100.0	74,871	100.0	7,437
25,000 to 50,000.....	7	7.9	248,986	0.7	35,569	<b>WESTERN REGION</b> <sup>10</sup> .....	13	100.0	681,085	100.0	52,391
50,000 to 100,000.....	16	18.0	1,221,909	3.4	76,399	Less than 25,000.....	10	76.9	63,618	9.3	6,362
100,000 to 200,000.....	27	30.3	3,873,014	10.7	143,445	25,000 and over <sup>11</sup> .....	3	23.1	617,467	90.7	206,822
200,000 to 500,000.....	17	19.1	5,494,567	15.2	323,210						
500,000 and over <sup>1</sup> .....	9	10.1	25,274,355	69.7	2,806,262						
<b>WISCONSIN</b> .....	<b>6</b>	<b>100.0</b>	<b>1,062,948</b>	<b>100.0</b>	<b>177,158</b>						
25,000 to 500,000 <sup>2</sup> .....	6	100.0	1,062,948	100.0	177,158						
<b>SOUTHEASTERN REGION</b> .....	<b>88</b>	<b>100.0</b>	<b>5,770,906</b>	<b>100.0</b>	<b>65,578</b>						
Less than 25,000.....	57	64.8	491,054	8.5	8,615						
25,000 to 50,000.....	16	18.2	617,596	10.7	38,600						
50,000 to 100,000.....	7	8.0	555,776	9.6	79,397						
100,000 to 200,000.....	4	4.5	539,945	9.4	134,986						
200,000 and over <sup>3</sup> .....	4	4.5	3,586,535	61.8	801,634						
<b>ALABAMA</b> .....	<b>39</b>	<b>100.0</b>	<b>5,053,035</b>	<b>100.0</b>	<b>129,565</b>						
Less than 25,000.....	16	41.0	158,237	3.1	9,890						
25,000 to 50,000.....	9	23.1	352,159	7.0	36,129						
50,000 to 100,000.....	7	17.9	555,776	11.0	79,397						
100,000 to 200,000.....	3	7.7	490,328	8.3	140,109						
200,000 and over <sup>3</sup> .....	4	10.3	3,566,535	70.6	891,634						

<sup>1</sup> Includes the groups "500,000 to 1,000,000" and "1,000,000 and over."  
<sup>2</sup> Includes the groups "25,000 to 50,000;" "50,000 to 100,000;" "100,000 to 200,000;" and "200,000 to 500,000."  
<sup>3</sup> Includes the groups "200,000 to 500,000;" "500,000 to 1,000,000;" and "1,000,000 and over."  
<sup>4</sup> Includes the groups "Less than 25,000" and "25,000 to 50,000."  
<sup>5</sup> Includes the groups "25,000 to 50,000" and "100,000 to 200,000."  
<sup>6</sup> Includes the groups "25,000 to 50,000" and "50,000 to 100,000."  
<sup>7</sup> Includes the groups "100,000 to 200,000;" "200,000 to 500,000;" and "500,000 to 1,000,000."  
<sup>8</sup> Includes the groups "50,000 to 100,000;" "100,000 to 200,000;" and "500,000 to 1,000,000."  
<sup>9</sup> Includes the groups "100,000 to 200,000" and "200,000 to 500,000."  
<sup>10</sup> Includes Arkansas, Missouri, and Texas.  
<sup>11</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming.  
<sup>12</sup> Includes the groups "25,000 to 50,000;" "100,000 to 200,000;" and "200,000 to 500,000."

The table shows that 6 enterprises producing more than 1,000,000 tons, and in fact averaging nearly 5,000,000 tons each, accounted for 47.9 per cent of the total production for the industry. These enterprises were in the Lake Superior district in Michigan and Minnesota and in the Birmingham district of Alabama.

Enterprises producing between 500,000 and 1,000,000 tons each, numbered only 10 in the United States and supplied 9.7 per cent of the iron-ore output. The 16 enterprises in these groups of largest producers accounted for 57.6 per cent of the output of the industry. Practically two-thirds of the enterprises

produced less than 100,000 each and more than one-third produced less than 25,000 tons each. All these small enterprises together contributed less than one-tenth of the total output.

In Table 15 producing enterprises in the United States as a whole are classified as in Table 14, but additional information—the number of mines and the average number of wage earners employed in each group—is given. The table indicates an average output per mine in each class of enterprises which is within the specified range for the enterprise except in the two classes having largest output. In these largest classes, producing more than 500,000 tons per enterprise, the large number of mines per enterprise reduced the output per mine to less than 500,000 tons. The table also shows that the number of tons of output per wage earner employed increased progressively from less than 350 tons per wage earner in classes producing less than 25,000 tons to 1,800 tons per wage earner in the class producing more than 1,000,000 tons.

TABLE 15.—NUMBER OF MINES AND AVERAGE NUMBER OF WAGE EARNERS FOR PRODUCING ENTERPRISES, ACCORDING TO QUANTITY OF PRODUCTS: 1919.

QUANTITY OF PRODUCT PER ENTERPRISE (TONS, 2,240 POUNDS).	Number of enter- prises.	Number of mines.	Wage earners (average number).	Iron ore produced (tons, 2,240 pounds).
All classes.....	290	406	45,741	61,173,254
Less than 25,000.....	103	111	2,625	887,971
25,000 to 50,000.....	34	37	2,107	1,262,165
50,000 to 100,000.....	45	52	4,424	3,516,475
100,000 to 200,000.....	55	74	7,126	7,960,786
200,000 to 500,000.....	37	54	9,527	12,232,635
500,000 to 1,000,000.....	10	17	3,721	5,932,526
1,000,000 and over.....	6	61	16,211	29,330,706

Table 16 shows by mining regions and states the average output (in tons per mine) of iron-ore mines. The Lake Superior Region, and the states in that region, outclassed all others in average tons produced per mine. New York and the Northeastern Region stood next, followed by Alabama and the Southeastern Region.

TABLE 16.—AVERAGE OUTPUT PER MINE, PRODUCING ENTERPRISES: 1919.

REGION AND STATE.	Number of mines.	Iron ore produced (tons, 2,240 pounds).	Average output per mine (tons 2,240 pounds).
UNITED STATES.....	406	61,173,254	150,673
LAKE SUPERIOR REGION.....	249	52,731,925	211,775
Michigan.....	100	15,410,494	154,106
Minnesota.....	141	36,258,433	257,152
Wisconsin.....	8	1,062,948	132,868
SOUTHEASTERN REGION.....	110	5,770,906	52,463
Alabama.....	48	5,053,035	105,272
Georgia.....	9	71,224	7,914
Maryland and North Carolina.....	7	59,135	8,448
Tennessee.....	24	282,938	11,791
Virginia.....	22	304,524	13,842
NORTHEASTERN REGION.....	21	1,914,967	91,189
New York.....	7	868,906	124,142
Connecticut, Massachusetts, New Jersey, and Pennsylvania.....	14	1,045,972	74,712
CENTRAL REGION <sup>1</sup> .....	10	74,371	7,437
WESTERN REGION <sup>2</sup> .....	16	681,085	42,568

<sup>1</sup> Includes Arkansas, Missouri, and Texas.

<sup>2</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming.

Size of enterprises according to average number of wage earners employed.—Table 17 shows for the United States as a whole, and by mining regions and states, the producing enterprises classified according to the average number of wage earners employed. Of the 290 enterprises engaged in the industry in the United States, 5 employed no wage earners, and 175 had fewer than 101 each and employed only 14.6 per cent of the total average number of wage earners. On the other hand, 110 enterprises had more than 100 wage earners each and employed 85.4 per cent of the total number. A relatively large number of small enterprises, as measured by the average number of wage earners employed, is characteristic of the industry for the United States as a whole but not of the Lake Superior and Northeastern Regions where one-half or more than one-half of the enterprises employing wage earners had more than 100 each.

TABLE 17.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS: 1919.

REGION, STATE, AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.		REGION, STATE, AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Average number.	Per cent distribution.		Number.	Per cent distribution.	Average number.	Per cent distribution.
<b>UNITED STATES</b> .....	260	100.0	45,741	100.0	<b>SOUTHEASTERN REGION—Con.</b>				
No wage earners.....	5	1.7			TENNESSEE.....	12	100.0	324	100.0
1 to 5.....	21	7.2	63	0.1	1 to 5.....	1	8.3	2	0.2
6 to 20.....	43	14.8	574	1.3	6 to 20.....	2	16.7	35	4.6
21 to 50.....	57	19.7	2,150	4.8	21 to 50.....	3	25.0	112	13.6
51 to 100.....	54	18.6	3,822	8.4	51 to 100.....	4	33.3	244	29.6
101 to 500.....	102	35.2	31,032	67.8	101 to 500.....	2	16.7	428	51.9
501 to 1,000.....	7	2.4	5,535	12.1					
Over 1,000.....	1	0.3	2,535	5.5	VIRGINIA.....	21	100.0	623	100.0
<b>LAKE SUPERIOR REGION</b> .....	160	100.0	33,541	100.0	1 to 5.....	5	23.8	18	2.9
No wage earners.....	1	0.6			6 to 20.....	5	23.8	59	9.5
1 to 5.....	2	1.3	9	(1)	21 to 50.....	9	42.9	400	64.2
6 to 20.....	14	8.8	194	0.6	51 to 100.....	2	9.5	146	23.4
21 to 50.....	24	15.0	932	2.8	GEORGIA.....	9	100.0	215	100.0
51 to 100.....	40	25.0	2,848	8.5	6 to 20.....	5	55.6	79	36.7
101 to 500.....	76	47.5	26,487	79.0	21 to 50.....	4	44.4	136	63.3
501 to 1,000.....	3	1.9	3,071	9.2	NORTH CAROLINA AND MARYLAND.....	7	100.0	177	100.0
<b>MINNESOTA</b> .....	89	100.0	16,236	100.0	1 to 5.....	4	57.1	7	4.0
No wage earners.....	1	1.1			6 to 20.....	2	28.6	24	13.6
1 to 5.....	1	1.1	4	(1)	101 to 500.....	1	14.3	146	82.5
6 to 20.....	11	12.4	154	0.9	<b>NORTHEASTERN REGION</b> .....	19	100.0	3,160	100.0
21 to 50.....	15	16.9	617	3.8	No wage earners.....	1	5.3		
51 to 100.....	28	29.2	1,834	11.3	1 to 5.....	1	5.3	2	0.1
101 to 500.....	35	39.3	13,627	83.9	6 to 20.....	1	5.3	18	0.6
<b>MICHIGAN</b> .....	65	100.0	16,160	100.0	21 to 50.....	4	21.0	134	4.2
1 to 5.....	1	1.5	5	(1)	51 to 100.....	1	5.3	65	2.1
6 to 20.....	3	4.6	40	0.2	101 to 500.....	9	47.4	1,007	50.9
21 to 50.....	8	12.3	275	1.7	501 to 1,000.....	2	10.5	1,332	42.2
51 to 100.....	13	20.0	963	6.0	<b>NEW YORK</b> .....	7	100.0	1,811	100.0
101 to 500.....	37	56.9	11,806	73.1	21 to 50.....	2	28.6	74	4.1
501 to 1,000.....	3	4.6	3,071	19.0	101 to 500.....	3	42.9	405	22.4
<b>WISCONSIN</b> .....	6	100.0	1,145	100.0	501 to 1,000.....	2	28.6	1,332	73.6
21 to 50.....	1	16.7	40	3.5	<b>NEW JERSEY, PENNSYLVANIA, MASSACHUSETTS, AND CONNECTICUT</b> .....	12	100.0	1,340	100.0
51 to 100.....	1	16.7	51	4.5	No wage earners.....	1	8.3		
101 to 500.....	4	66.7	1,054	92.1	1 to 5.....	1	8.3	2	0.1
<b>SOUTHEASTERN REGION</b> .....	88	100.0	8,324	100.0	6 to 20.....	1	8.3	20	1.5
No wage earners.....	1	1.1			21 to 50.....	2	16.7	60	4.4
1 to 5.....	11	12.5	29	0.3	51 to 100.....	1	8.3	65	4.8
6 to 20.....	21	23.9	276	3.3	101 to 500.....	6	50.0	1,202	89.1
21 to 50.....	25	28.4	978	11.7	<b>CENTRAL REGION</b> .....	10	100.0	188	100.0
51 to 100.....	12	13.6	862	10.2	No wage earners.....	2	20.0		
101 to 500.....	15	17.0	2,527	30.4	1 to 5.....	2	20.0	7	3.7
501 to 1,000.....	2	2.3	1,132	13.6	6 to 20.....	2	20.0	21	11.2
Over 1,000.....	1	1.1	2,535	30.5	21 to 50.....	3	30.0	102	54.5
<b>ALABAMA</b> .....	39	100.0	6,485	100.0	51 to 100.....	1	10.0	57	30.3
No wage earners.....	1	2.6			<b>WESTERN REGION</b> .....	13	100.0	528	100.0
1 to 5.....	1	2.6	2	(1)	1 to 5.....	5	38.5	16	3.0
6 to 20.....	7	17.9	76	1.2	6 to 20.....	5	38.5	63	11.9
21 to 50.....	9	23.1	335	5.0	21 to 50.....	1	7.7	33	7.2
51 to 100.....	6	15.4	462	7.1	101 to 500.....	2	15.4	411	77.8
101 to 500.....	12	30.8	1,953	30.1					
501 to 1,000.....	2	5.1	1,132	17.5					
Over 1,000.....	1	2.6	2,535	39.1					

1 Less than one-tenth of 1 per cent.  
 2 Includes states listed in order of average number of wage earners as follows: Missouri, Texas, and Arkansas.  
 3 Includes states listed in order of average number of wage earners as follows: New Mexico, Wyoming, Utah, Idaho, Montana, California, and Washington.

Size of enterprises according to acreage of mineral land.—Table 18 shows, by mining regions and states, the producing enterprises classified according to acres of mineral land operated. For the United States as a whole, the largest number of enterprises was in the class operating from 1 to 50 acres each; but the enterprises in the group operating more than 1,000 acres each, which constituted only 12.8 per cent of the total number of enterprises, operated 78.6 per cent of the total acreage. In the Lake Superior Region the

mineral land per enterprise, and particularly the mineral land per mine, was relatively small. The large holdings per enterprise and per mine were reported principally from the Southeastern and Northeastern Regions.

Table 19, relating to the United States as a whole, shows, for producing enterprises, the number of acres of mineral and other land controlled, the form of tenure of mineral land, and the number of mines operated.

TABLE 18.—SIZE OF PRODUCING ENTERPRISES, BY NUMBER OF ACRES OF MINERAL LAND OPERATED: 1919.

REGION, STATE, AND ACRES PER ENTERPRISE.	ENTERPRISES.		Number of mines.	MINERAL LAND OPERATED.		REGION, STATE, AND ACRES PER ENTERPRISE.	ENTERPRISES.		Number of mines.	MINERAL LAND OPERATED.	
	Number.	Per cent distribution.		Acres.	Per cent distribution.		Number.	Per cent distribution.		Acres.	Per cent distribution.
<b>UNITED STATES</b> .....	<b>290</b>	<b>100.0</b>	<b>406</b>	<b>241,508</b>	<b>100.0</b>	<b>SOUTHEASTERN REGION—Con.</b>					
1 to 50.....	70	24.1	73	2,420	1.0	<b>MARYLAND AND NORTH CAROLINA</b> .....	7	100.0	7	4,267	100.0
50 to 100.....	41	14.1	44	3,260	1.3	1 to 50.....	5	71.4	5	186	4.4
100 to 200.....	64	22.1	85	9,819	4.1	200 to 500.....	1	14.3	1	201	4.7
200 to 500.....	51	17.6	61	16,242	6.7	1,000 and over.....	1	14.3	1	3,680	90.9
500 to 1,000.....	27	9.3	37	19,824	8.2	<b>TENNESSEE</b> .....	12	100.0	24	4,494	100.0
1,000 and over.....	37	12.8	105	189,943	78.6	1 to 50.....	3	25.0	5	61	1.4
						50 to 100.....	1	8.3	1	85	1.9
<b>LAKE SUPERIOR REGION</b> .....	<b>160</b>	<b>100.0</b>	<b>249</b>	<b>44,696</b>	<b>100.0</b>	100 to 200.....	1	8.3	8	200	4.5
1 to 50.....	37	23.1	38	1,395	3.1	200 to 500.....	4	33.3	7	1,263	28.1
50 to 100.....	33	20.6	36	2,548	5.7	500 to 1,000.....	2	16.7	2	1,385	30.8
100 to 200.....	47	29.4	68	7,241	16.2	1,000 and over.....	1	8.3	1	1,600	33.4
200 to 500.....	26	16.2	31	8,161	18.3	<b>VIRGINIA</b> .....	21	100.0	22	33,752	100.0
500 to 1,000.....	11	6.9	16	7,777	17.4	1 to 50.....	2	9.5	2	65	0.2
1,000 and over.....	6	3.8	70	17,574	39.3	50 to 100.....	2	9.5	2	400	1.2
<b>MICHIGAN</b> .....	<b>65</b>	<b>100.0</b>	<b>100</b>	<b>20,025</b>	<b>100.0</b>	200 to 500.....	3	14.3	4	1,356	4.0
1 to 50.....	6	9.2	6	235	1.2	500 to 1,000.....	7	33.3	7	5,267	15.6
50 to 100.....	15	23.1	15	1,169	5.8	1,000 and over.....	7	33.3	7	26,664	79.0
100 to 200.....	22	33.8	26	3,398	17.0	<b>NORTHEASTERN REGION</b> .....	<b>19</b>	<b>100.0</b>	<b>21</b>	<b>38,186</b>	<b>100.0</b>
200 to 500.....	12	18.5	14	4,149	20.7	1 to 50.....	1	5.3	1	40	0.1
500 to 1,000.....	6	9.2	8	3,883	19.4	50 to 100.....	1	5.3	1	100	0.3
1,000 and over.....	4	6.2	31	7,191	35.9	100 to 200.....	5	26.3	6	679	1.8
<b>MINNESOTA</b> .....	<b>89</b>	<b>100.0</b>	<b>141</b>	<b>21,971</b>	<b>100.0</b>	200 to 500.....	5	26.3	5	1,477	3.9
1 to 50.....	31	34.8	32	1,160	5.3	1,000 and over.....	7	36.8	8	35,890	94.0
50 to 100.....	16	18.0	18	1,259	5.7	<b>NEW YORK</b> .....	<b>7</b>	<b>100.0</b>	<b>7</b>	<b>20,121</b>	<b>100.0</b>
100 to 200.....	25	28.1	32	3,843	17.5	200 to 500.....	4	57.1	4	1,231	6.1
200 to 500.....	12	13.5	14	3,312	15.1	1,000 and over.....	3	42.9	3	18,990	93.9
500 to 1,000.....	3	3.4	6	2,014	9.2	<b>CONNECTICUT, MASSACHUSETTS, NEW JERSEY, AND PENNSYLVANIA</b> .....	<b>12</b>	<b>100.0</b>	<b>14</b>	<b>18,065</b>	<b>100.0</b>
1,000 and over.....	2	2.2	39	10,383	47.3	1 to 50.....	1	8.3	1	40	0.2
<b>WISCONSIN</b> .....	<b>6</b>	<b>100.0</b>	<b>8</b>	<b>2,700</b>	<b>100.0</b>	50 to 100.....	1	8.3	1	100	0.6
50 to 100.....	2	33.3	3	120	4.4	100 to 200.....	5	41.7	6	679	3.8
200 to 500.....	2	33.3	3	700	25.9	200 to 500.....	1	8.3	1	245	1.4
500 to 1,000.....	2	33.3	2	1,880	69.6	1,000 and over.....	4	33.3	5	17,000	94.1
<b>SOUTHEASTERN REGION</b> .....	<b>88</b>	<b>100.0</b>	<b>110</b>	<b>110,491</b>	<b>100.0</b>	<b>CENTRAL REGION</b> <sup>1</sup> .....	<b>10</b>	<b>100.0</b>	<b>10</b>	<b>43,727</b>	<b>100.0</b>
1 to 50.....	25	28.4	27	764	0.7	1 to 50.....	2	20.0	2	45	0.1
50 to 100.....	5	5.7	5	432	0.4	50 to 100.....	2	20.0	2	180	0.4
100 to 200.....	9	10.2	19	1,464	1.3	100 to 200.....	2	20.0	2	315	0.7
200 to 500.....	15	17.0	20	5,169	4.7	200 to 500.....	1	10.0	1	280	0.6
500 to 1,000.....	14	15.9	17	10,812	9.8	1,000 and over.....	3	30.0	3	42,907	98.1
1,000 and over.....	20	22.7	22	91,850	83.1	<b>WESTERN REGION</b> <sup>2</sup> .....	<b>13</b>	<b>100.0</b>	<b>16</b>	<b>4,408</b>	<b>100.0</b>
<b>ALABAMA</b> .....	<b>39</b>	<b>100.0</b>	<b>45</b>	<b>65,208</b>	<b>100.0</b>	1 to 50.....	5	38.5	5	176	4.0
1 to 50.....	11	28.2	11	367	0.6	100 to 200.....	1	7.7	1	120	2.7
50 to 100.....	3	7.7	3	247	0.4	200 to 500.....	4	30.8	4	1,155	26.2
100 to 200.....	5	12.8	8	1,739	2.6	500 to 1,000.....	2	15.4	4	1,235	28.0
200 to 500.....	5	12.8	6	1,549	2.4	1,000 and over.....	1	7.7	2	1,722	39.1
500 to 1,000.....	5	12.8	8	4,160	6.4	<b>GEORGIA</b> .....	<b>9</b>	<b>100.0</b>	<b>9</b>	<b>2,770</b>	<b>100.0</b>
1,000 and over.....	10	25.6	12	58,146	89.2	1 to 50.....	4	44.4	4	85	3.1
<b>MISSISSIPPI</b> .....	<b>9</b>	<b>100.0</b>	<b>9</b>	<b>2,770</b>	<b>100.0</b>	50 to 100.....	1	11.1	1	100	3.6
1 to 50.....	4	44.4	4	85	3.1	100 to 200.....	1	11.1	1	125	4.5
50 to 100.....	1	11.1	1	100	3.6	200 to 500.....	2	22.2	2	800	28.9
100 to 200.....	1	11.1	1	125	4.5	1,000 and over.....	1	11.1	1	1,660	59.9
200 to 500.....	2	22.2	2	800	28.9						
500 to 1,000.....	2	22.2	2	800	28.9						
1,000 and over.....	1	11.1	1	1,660	59.9						

<sup>1</sup>Includes Arkansas, Missouri, and Texas.

<sup>2</sup>Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming.

TABLE 19.—LAND CONTROLLED, AND TENURE OF MINERAL LAND ACCORDING TO NUMBER OF ACRES OPERATED, PRODUCING ENTERPRISES: 1919.

ACRES PER ENTERPRISE.	Number of enterprises.	Per cent distribution.	Number of mines.	LAND CONTROLLED (ACRES.)				Timber and other lands (acres.)
				Mineral land.				
				Operated.	Per cent distribution.	Owued.	Held under lease.	
All classes..	290	100.0	406	241,508	100.0	177,296	65,280	696,140
1 to 50.....	70	24.1	73	2,420	1.0	552	1,873	8,235
50 to 100.....	41	14.1	44	3,260	1.3	705	2,555	1,548
100 to 200.....	64	22.1	85	9,819	4.1	2,336	7,523	6,129
200 to 500.....	51	17.6	61	16,242	6.7	7,064	9,178	33,923
500 to 1,000.....	27	9.3	37	19,824	8.2	12,308	8,056	1,157
1,000 and over.....	37	12.8	105	189,943	78.6	154,331	36,095	645,148

PERSONS ENGAGED IN THE INDUSTRY.

All classes of persons according to class and sex.—  
Table 20 shows the persons engaged in the iron-ore

mining industry in 1919 and gives the number of males and females (except among wage earners) and the per cent distribution of each class of employees. The salaried employees, numbering 2,985, constituted only 6.1 per cent of the total number of persons engaged in the industry. Three hundred females, or six-tenths of 1 per cent of the total number of persons engaged in the industry, were reported among the salaried employees and almost entirely in the class "Clerk and other subordinate salaried employees." The average number of wage earners reported for the year was 45,741, which constituted 93.8 per cent of the total number of persons engaged in producing iron-ore enterprises. As shown in the detailed statistics (Table 30), 7 of the wage earners reported by producing enterprises on the representative day were females. Table 20 also shows that 9 of the 41 proprietors performed manual labor in or about the mines.

TABLE 20.—PERSONS ENGAGED, PRODUCING ENTERPRISES: 1919.

REGION AND STATE.	Total.	PROPRIETORS AND OFFICIALS.											CLERKS AND OTHER SUBORDINATE SALARIED EMPLOYEES.			WAGE EARNERS.		PROPRIETORS PERFORMING MANUAL LABOR.		
		Proprietors and firm members.			Salaried officers of corporations.			Superintendents and managers.			Technical employees.			Male.	Female.	Per cent of total.	Average number.	Per cent of total.	Number.	Per cent of total.
		Male.	Female.	Per cent of total.	Male.	Female.	Per cent of total.	Male.	Female.	Per cent of total.	Male.	Female.	Per cent of total.							
United States.....	48,767	37	4	0.1	129	1	0.3	615	1	1.3	487	12	1.0	1,454	286	3.6	45,741	93.8	9	22.0
LAKE SUPERIOR REGION.....	35,785	5		(1)	91		0.3	427	1	1.2	411	12	1.2	1,117	180	3.6	33,541	93.7		
Michigan.....	17,169	2		(1)	40		0.2	184	1	1.1	225	10	1.4	447	100	3.2	16,160	94.1		
Minnesota.....	17,422	2		(1)	50		0.3	232		1.3	179		1.0	649	74	4.1	16,236	93.2		
Wisconsin.....	1,194	1		0.1	1		0.1	11		0.9	7	2	6.8	21	6	2.3	1,145	95.9		
SOUTHEASTERN REGION.....	8,818	14		0.2	11	1	0.1	112		1.3	38		0.4	240	78	3.6	8,224	94.4	1	7.1
Alabama.....	6,877	2		(1)	7	1	0.1	69		1.0	31		0.5	212	70	4.1	6,485	94.3	1	50.0
Georgia.....	229	2		0.9				6		2.6	1		0.4	5		2.2	215	93.9		
Maryland and North Carolina.....	190	8		4.2	1		0.5	1		0.5	1		0.5	2		1.1	177	93.2		
Tennessee.....	859	2		0.2	2		0.2	13		1.5	2		0.2	14	2	1.9	824	95.9		
Virginia.....	663				1		0.2	23		3.5	3		0.4	7	6	2.0	623	94.0		
NORTHEASTERN REGION.....	3,383	5	4	0.3	19		0.6	55		1.6	22		0.9	85	23	3.2	3,160	93.4		
New York.....	1,943		1	0.1	11		0.6	24		1.2	17		0.9	63	16	4.1	1,811	93.2		
Connecticut, Massachusetts, New Jersey, and Pennsylvania.....	1,440	5	3	0.6	8		0.6	31		2.2	15		1.0	22	7	2.0	1,349	93.7		
CENTRAL REGION <sup>1</sup> .....	216	3		1.4	6		2.8	8		3.7	2		0.9	5	4	4.2	188	87.0	1	32.3
WESTERN REGION <sup>2</sup> .....	565	10		1.8	2		0.4	13		2.3	4		0.7	7	1	1.4	528	93.5	7	70.0

<sup>1</sup> Less than one-tenth of 1 per cent.

<sup>2</sup> Includes Arkansas, Missouri, and Texas.

<sup>3</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming.

Wage earners, by occupations.—Table 21 shows the number of wage earners employed on December 15 or the nearest representative day according to occupa-

tions, gives the per cent each group is of the total and the number in each group employed above ground and below ground.

TABLE 21.—WAGE EARNERS BY OCCUPATIONS, DECEMBER 15, OR NEAREST REPRESENTATIVE DAY, PRODUCING ENTERPRISES: 1919.

REGION AND STATE.	Total.	ALL CLASSES.				FOREMEN, SHIFT BOSSES, ETC.			ENGINEERS, HOISTMEN, ELECTRICIANS, MECHANICS, ETC.			MINERS AND DRILLERS, INCLUDING THEIR HELPERS.			TIMBERMEN, TRACEMEN, AND MEN ENGAGED IN HAULING, ETC.			MUCKERS, LOADERS, LABORERS, AND OTHERS NOT CLASSIFIED.			IN MILLS AND BENEFICIATING PLANTS.	
		Above ground.		Below ground.		Number.	Per cent of total.	Above ground.		Below ground.		Number.	Per cent of total.	Above ground.		Below ground.		Number.	Per cent of total.	Number above ground.	Per cent of total.	
		Number.	Per cent of total.	Number.	Per cent of total.			Above ground.	Below ground.	Per cent of total.	Above ground.			Below ground.	Per cent of total.	Above ground.	Below ground.					Per cent of total.
UNITED STATES.....	47,740	19,060	39.9	28,680	60.1	789	878	3.5	6,536	1,063	15.9	1,354	15,326	34.9	1,677	5,495	15.0	7,436	5,938	28.0	1,268	2.7
LAKE SUPERIOR REGION.....	34,700	13,368	38.5	21,332	61.5	569	607	3.4	5,169	725	17.0	689	12,609	36.3	1,231	4,302	15.9	5,236	3,089	24.0	474	1.4
Michigan.....	16,351	4,780	29.1	11,571	70.9	157	323	2.9	1,916	399	14.2	117	7,050	43.8	469	2,699	19.4	2,068	1,120	19.5	33	0.2
Minnesota.....	17,127	8,350	48.8	8,777	51.2	400	249	3.8	3,165	263	20.0	552	4,974	32.3	742	1,431	12.7	3,052	1,870	25.7	439	2.6
Wisconsin.....	1,222	258	21.1	964	78.9	12	35	3.8	88	73	13.2	20	585	49.5	20	172	15.7	116	90	17.6	2	0.2
SOUTHEASTERN REGION.....	9,155	3,796	41.5	5,357	58.5	144	154	3.3	866	150	11.1	469	2,005	27.0	359	1,049	15.4	1,470	1,099	37.9	490	5.4
Alabama.....	6,961	2,320	33.3	4,641	66.7	69	139	8.0	663	114	11.4	136	1,642	25.5	206	952	16.0	950	1,794	39.4	276	4.0
Georgia.....	247	225	91.1	22	8.9	7	2	3.6	36		14.6	34	20	21.9	67		27.1	34		13.8	47	19.0
Maryland and North Carolina.....	129	85	65.9	44	34.1	2	2	3.1	7	2	7.0	25	2	20.9				4	38	32.6	47	36.4
Tennessee.....	995	680	68.3	315	31.7	25	1	2.6	80	8	8.8	121	201	32.4	69	39	10.9	322	66	39.0	63	6.3
Virginia.....	823	488	59.3	335	40.7	41	10	6.2	60	26	10.4	153	140	35.6	17	58	9.1	160	101	31.7	57	6.9
NORTHEASTERN REGION.....	2,991	1,410	47.1	1,581	52.9	44	91	4.5	401	160	18.8	69	592	22.1	73	84	5.2	522	654	39.2	301	10.1
New York.....	1,632	749	45.9	883	54.1	24	60	5.1	150	100	15.3	59	254	19.2	22	35	3.5	321	494	46.2	173	10.6
Connecticut, Massachusetts, New Jersey, and Pennsylvania.....	1,359	661	48.6	698	51.4	20	31	3.8	251	60	22.9	10	338	25.6	51	49	7.4	201	220	31.0	128	9.4
CENTRAL REGION <sup>1</sup> .....	192	161	83.9	31	16.1	12	6	9.4	14		7.3	55	25	41.7	4		2.1	76		39.6		
WESTERN REGION <sup>2</sup> .....	702	313	44.6	389	55.4	20	20	5.7	76	18	13.4	72	95	23.8	10	60	10.0	132	196	46.7	3	0.4

<sup>1</sup> Includes Arkansas, Missouri, and Texas.

<sup>2</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming.

The table shows that for the United States as a whole 2.7 per cent of the total number were employed in beneficiating plants and not in mining operations proper. In the Lake Superior Region the proportion of wage earn-

ers in beneficiating plants was less because the ratio of enterprises operating such plants to the total number of enterprises was small in the region, as shown in Table 30. In the Northeastern and Southeastern



Regions the proportion was much greater. Sixty per cent of all wage earners reported by producing iron-ore enterprises in the United States in 1919 were employed below ground. In all regions except the Central Region a majority of the wage earners were reported as employed below ground, but in the Southeastern Region the only state which reported a majority of the wage earners below ground was Alabama. It should be noted, however, that the number reported below ground in iron-ore mining includes men employed in some deep open pits, particularly in Minnesota. For the industry as a whole, and in the Lake Superior Region, the largest class of wage earners reported were the miners, drillmen, and their helpers, and the next largest class, the muckers, loaders, laborers, and others not classified, which may be considered the unskilled class. In the Northeastern, Southeastern, and Western Regions the largest number of wage earners is reported in this unskilled class.

**Wage earners, by months.**—Table 22 shows, for producing and nonproducing enterprises, for the United States as a whole, and by mining regions and states, the number of wage earners employed on the 15th day or the nearest representative day of each month. The table also shows the average number of wage earners, indicates the months of maximum and minimum employment, and gives the ratio of the minimum to the maximum number. The changes in number employed from month to month reflect conditions prevailing in the industry during the year.

It will be noted that the number of wage earners reported for enterprises on the representative day, which is presented in several other tables, differs from the numbers shown in Table 22 for any month. This is accounted for by the fact that the representative day selected for reporting wage earners in detail was different for different enterprises. Therefore, the aggregate for the representative day does not agree with the total reported by each enterprise for any one month.

TABLE 22.—WAGE EARNERS, BY MONTHS, ALL ENTERPRISES: 1919.

[The month of maximum employment for each region and state is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

REGION AND STATE.	Average number employed during year.	NUMBER EMPLOYED ON THE 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
UNITED STATES.....	46,339	<b>48,312</b>	47,800	47,287	45,456	46,329	45,264	46,802	47,378	47,438	46,224	44,603	<i>43,085</i>	89.2
Producing enterprises.....	45,741	<b>47,493</b>	47,205	46,712	44,822	45,631	44,625	46,286	46,754	46,911	45,772	44,126	<i>42,555</i>	89.6
LAKE SUPERIOR REGION.....	33,541	<b>32,751</b>	33,021	33,013	33,194	34,903	34,445	34,933	34,769	34,588	33,797	32,218	<i>30,819</i>	88.1
Minnesota.....	16,236	14,961	15,252	15,132	16,083	17,716	17,605	17,763	17,574	17,069	16,225	15,338	<i>14,119</i>	79.5
Michigan.....	16,160	16,584	16,527	16,670	15,927	15,999	16,710	16,115	16,096	16,472	16,464	15,774	<i>16,583</i>	93.5
Wisconsin.....	1,145	1,206	1,242	1,211	1,179	1,178	1,131	1,115	1,099	1,047	1,108	1,106	1,118	84.3
SOUTHEASTERN REGION.....	8,324	<b>9,001</b>	9,577	9,178	7,429	6,815	<i>6,716</i>	7,530	8,273	8,606	8,749	8,779	8,543	69.3
Alabama.....	6,485	7,450	7,423	7,034	5,641	5,261	<i>5,213</i>	5,827	6,525	6,798	6,873	7,023	6,647	70.0
Tennessee.....	824	1,007	953	960	790	644	<i>604</i>	699	763	822	885	849	822	60.0
Virginia.....	623	791	764	761	593	543	536	549	534	556	539	613	642	67.5
Georgia.....	215	250	240	245	212	180	182	241	215	226	213	163	211	64.8
North Carolina and Maryland.....	177	193	197	178	183	187	181	234	133	206	139	127	131	54.5
NORTHEASTERN REGION.....	3,160	<b>4,259</b>	3,789	3,667	3,310	2,957	<i>2,555</i>	2,906	2,822	2,840	2,944	2,896	2,973	60.0
New York.....	1,811	<b>2,699</b>	2,127	1,963	1,842	1,758	1,740	1,724	1,582	1,587	1,617	1,671	1,632	60.4
New Jersey, Pennsylvania, Massachusetts, and Connecticut.....	1,349	1,660	1,662	1,714	1,468	1,199	<i>815</i>	1,184	1,240	1,253	1,327	1,325	1,341	47.5
CENTRAL REGION <sup>1</sup> .....	188	148	165	173	202	206	233	191	173	191	191	163	140	49.0
WESTERN REGION <sup>2</sup> .....	528	644	653	681	687	680	675	674	717	684	91	70	80	9.8
Nonproducing enterprises.....	598	<b>819</b>	595	575	634	608	639	606	624	827	<i>453</i>	477	530	55.2
Minnesota.....	275	<b>463</b>	296	275	292	326	296	275	293	220	<i>168</i>	180	226	36.3
All other <sup>3</sup> .....	323	356	309	300	342	372	343	331	331	307	<i>284</i>	297	304	76.3

<sup>1</sup> Includes states listed in order of average number of wage earners as follows: Missouri, Texas, and Arkansas.

<sup>2</sup> Includes states listed in order of average number of wage earners as follows: New Mexico, Wyoming, Utah, Idaho, Montana, California, and Washington.

<sup>3</sup> Includes states listed in order of average number of wage earners as follows: Alabama, Wisconsin, Michigan, and Utah.

**Prevailing hours of labor.**—In Table 23 the producing enterprises are classified according to prevailing hours of labor per week, and the number of wage earners in each group is given. The wage earners of each enterprise are classed as a total, regardless of the fact that some work more or fewer hours than those prevailing for the majority. In the industry as a whole 44 to 53 hours per week, that is, the 8-hour day and 6-day week prevailed for a majority of the enterprises employing wage earners, but only for 44.4 per cent of the total average number of wage earners. In 43.5 per cent of the enterprises employing wage earners and for 53.9 per cent

of the wage earners the prevailing hours of labor were 54 to 62 per week with the 10-hour day and 6-day week ruling.

In Michigan and Wisconsin the 48-hour week prevailed, but in Minnesota a large majority of the wage earners worked 60 hours per week, and as a consequence 60 hours was the prevailing time in the Lake Superior Region. In the Northeastern Region the prevailing hours were 44 to 53 per week and the 8-hour day and 6-day week were most common. In the Southeastern Region longer hours prevailed, chiefly 10 a day and 60 a week.

TABLE 23.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR: 1919.

REGION AND STATE.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enter-prises.	Wage earners (average number).	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 to 71.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
UNITED STATES.....	1 285	45,741	1	11	4	219	151	20,311	124	24,637	5	563
LAKE SUPERIOR REGION.....	159	33,541	1	11	1	8	111	15,671	43	17,472	3	379
Minnesota.....	88	16,236	1	11	1	8	50	5,240	33	10,598	3	379
Michigan.....	65	16,160					55	9,286	10	6,874		
Wisconsin.....	6	1,145					6	1,145				
SOUTHEASTERN REGION.....	87	8,324			2	204	18	1,427	66	6,547	1	146
Alabama.....	38	6,485			2	204	11	1,274	25	5,007		
Tennessee.....	12	824					1	19	11	805		
Virginia.....	21	623					3	56	18	567		
Georgia.....	9	215					2	77	7	138		
North Carolina and Maryland.....	7	177					1	1	5	30	1	146
NORTHEASTERN REGION.....	18	3,160					14	2,871	4	289		
New York.....	7	1,811					6	1,774	1	37		
New Jersey, Pennsylvania, Massachusetts, and Connecticut.....	11	1,349					8	1,097	3	252		
CENTRAL REGION <sup>1</sup> .....	8	188			1	7	3	69	3	74	1	33
WESTERN REGION <sup>2</sup> .....	13	528					5	273	8	255		

<sup>1</sup> Exclusive of 5 enterprises employing no wage earners in the following states: Alabama, Arkansas, Minnesota, Missouri, and Pennsylvania.  
<sup>2</sup> Includes Missouri, Texas, and Arkansas.  
<sup>3</sup> Includes New Mexico, Wyoming, Utah, Idaho, Montana, California, and Washington.

LAND TENURE AND ROYALTIES.

Land tenure.—Table 24 shows for 1919 the number of acres controlled by producing iron-ore mining enterprises in 1919. The table distinguishes mineral land (that is, land held for its content of iron ore) from timber and other lands, and classifies the mineral land according to form of tenure. In this table, and in

others relating to acreage, the number of acres of mineral land controlled by the mining enterprises is greater by the amount of acreage leased to other operators and by the idle acreage, than the number of acres reported operated. "Acres operated" is exclusive of the duplication in "Acres controlled" of acreage reported by both owners and lessees or prior lessees and sublessees.

TABLE 24.—LAND OPERATED AND CONTROLLED, PRODUCING ENTERPRISES: 1919.

REGION AND STATE.	Mineral land operated (acres).	LAND CONTROLLED (ACRES).					REGION AND STATE.	Mineral land operated (acres).	LAND CONTROLLED (ACRES).				
		Aggregate.	Mineral land.			Timber and other lands.			Aggregate.	Mineral land.			Timber and other lands.
			Total.	Owned.	Held under lease.					Total.	Owned.	Held under lease.	
UNITED STATES.....	241,608	938,716	242,576	177,296	65,280	696,140	NORTHEASTERN REGION.....	33,186	154,649	33,186	20,028	18,153	116,463
LAKE SUPERIOR REGION.....	44,696	533,336	45,789	10,788	34,971	492,577	New York.....	20,121	136,560	20,121	8,461	11,660	116,429
Michigan.....	20,025	252,949	20,151	4,775	15,376	232,798	Connecticut, Massachusetts, New Jersey, and Pennsylvania.....	13,065	18,099	13,065	11,567	6,498	34
Minnesota.....	21,971	282,598	22,908	4,073	18,835	260,690	CENTRAL REGION <sup>1</sup> .....	43,727	64,073	43,732	42,947	785	20,341
Wisconsin.....	2,700	2,789	2,700	1,940	760	89	WESTERN REGION <sup>2</sup> .....	4,408	4,408	4,408	3,733	625	
SOUTHEASTERN REGION.....	110,491	177,350	110,491	99,750	10,741	68,759							
Alabama.....	65,208	117,626	65,208	64,631	577	52,413							
Georgia.....	2,770	3,170	2,770	2,160	610	400							
Maryland and North Carolina.....	4,267	4,267	4,267	617	3,650								
Tennessee.....	4,494	11,544	4,494	1,386	3,108	7,050							
Virginia.....	33,752	40,643	33,752	30,956	2,796	6,891							

<sup>1</sup> Includes the following states: Arkansas, Missouri, and Texas.  
<sup>2</sup> Includes the following states: California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming.

Table 25 presents, for all iron-ore mining enterprises, statistics for 1919 and 1909 relating to acreage of mineral land and other lands controlled. The table shows increase in acreage of iron-ore lands controlled by producing enterprises in Alabama, Michigan, and Minnesota, and in the Lake Superior Region as a whole, but decrease in the other principal regions and states and for the United States. The table also shows for the United States and principal regions and states except Michigan and Alabama decrease in timber and other lands controlled by producing enterprises.

In Table 26 all enterprises in the iron-ore industry are grouped according to form of tenure of mineral land; that is, whether held by ownership, under lease, or partly by ownership and partly under lease. This table shows for the United States as a whole that 72.7 per cent of the iron-ore land controlled by all active enterprises and 73.1 per cent by the producing enterprises was owned by the operators. However, in the leading states, Michigan and Minnesota, the operators of producing enterprises owned less than one-fourth of the iron-ore land controlled by them.

## MINES AND QUARRIES.

TABLE 25.—COMPARATIVE STATISTICS, LAND CONTROLLED: 1919 AND 1909.

REGION AND STATE.	ACREAGE CONTROLLED.											Timber and other lands.			
	All land.			Mineral land.									1919	1909	Per cent of increase. <sup>1</sup>
	1919	1909	Per cent of increase. <sup>1</sup>	Total.			Owned.			Leased.					
				1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>
UNITED STATES .....	943,826	1,343,634	-29.8	247,082	416,016	-40.6	179,635	306,257	-41.3	67,447	109,759	-38.5	696,744	927,618	-24.9
Producing enterprises.....	938,716	1,313,214	-28.5	242,576	387,608	-37.4	177,296	282,661	-37.3	65,280	104,947	-37.8	696,140	925,606	-24.8
LAKE SUPERIOR REGION.....	538,336	600,283	-10.3	45,759	39,624	15.5	10,788	13,338	-19.1	34,971	26,286	33.0	492,577	560,659	-12.1
Michigan.....	252,949	247,656	2.1	20,151	17,205	17.1	4,775	4,464	7.0	15,376	12,741	20.7	232,798	230,451	1.0
Minnesota.....	282,598	332,233	-14.9	22,908	14,336	59.8	4,073	2,510	62.3	18,835	11,826	59.3	259,690	317,897	-18.3
Wisconsin.....	2,789	20,394	-86.3	2,700	8,083	-66.6	1,970	6,364	-69.5	760	1,719	-55.8	69	12,311	-99.3
SOUTHEASTERN REGION.....	177,250	332,822	-46.7	110,491	208,904	-47.1	99,750	153,670	-35.1	10,741	55,234	-80.6	66,759	123,918	-46.1
Alabama.....	117,626	63,226	86.0	65,208	52,000	25.4	64,631	42,337	52.7	577	9,663	-94.0	52,418	11,236	366.9
Georgia.....	3,170	73,683	-95.7	2,770	70,570	-96.1	2,160	69,160	-96.9	610	1,410	-56.7	400	3,113	-87.2
Maryland and North Carolina <sup>2</sup> .....	4,267	24,278	-82.4	4,267	7,878	-45.8	617	5,788	-89.3	3,650	2,090	74.6	.....	16,400	.....
Tennessee.....	11,544	75,256	-84.7	4,494	14,260	-68.5	1,386	10,001	-86.0	3,108	4,249	-26.9	7,050	61,006	-88.4
Virginia.....	40,643	96,379	-57.8	33,752	64,206	-47.4	30,956	26,384	17.3	2,796	37,822	-92.6	6,891	32,178	-78.6
NORTHEASTERN REGION.....	154,649	284,682	-45.7	38,186	125,509	-69.6	20,028	103,853	-80.7	18,158	21,656	-16.2	116,463	159,173	-26.8
New York.....	136,550	247,783	-44.9	20,121	95,920	-79.0	8,461	87,701	-90.4	11,680	8,219	41.9	116,429	151,863	-23.3
Connecticut, Massachusetts, New Jersey, and Pennsylvania <sup>3</sup> .....	18,099	36,899	-50.9	18,065	29,589	-38.9	11,567	16,152	-28.4	6,498	13,437	-51.6	34	7,310	-99.5
CENTRAL REGION <sup>4</sup> .....	64,073	94,209	-32.0	43,732	12,353	254.0	42,947	11,167	284.6	785	1,186	-33.8	20,341	81,856	-75.2
WESTERN REGION <sup>5</sup> .....	4,408	1,218	261.9	4,408	1,218	261.9	3,783	633	497.6	625	585	6.8	.....	.....	.....
Nonproducing enterprises.....	5,110	30,420	-83.2	4,506	28,408	-84.1	2,339	23,596	-90.1	2,167	4,812	-55.0	604	2,012	-70.0
Minnesota.....	1,532	1,589	-3.6	1,292	1,499	-12.0	.....	200	.....	1,292	1,289	1.8	240	120	100.0
All other states <sup>6</sup> .....	3,578	28,831	-87.6	3,214	26,939	-88.1	2,339	23,396	-90.0	.....	875	-75.3	364	1,892	-80.8

<sup>1</sup> A minus sign (-) denotes decrease.<sup>2</sup> Also Kentucky and West Virginia in 1909.<sup>3</sup> Also Ohio in 1909.<sup>4</sup> Includes Arkansas, Missouri, and Texas for 1919 and Missouri and Texas for 1909.<sup>5</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming for 1919 and Colorado, Nevada, Utah, New Mexico, and Wyoming for 1909.<sup>6</sup> Includes Alabama, Michigan, Utah, and Wisconsin for 1919 and Iowa, Michigan, Missouri, Pennsylvania, Tennessee, Utah, Virginia, and Wisconsin for 1909.

TABLE 26.—NUMBER OF PRODUCING AND NONPRODUCING ENTERPRISES AND ACRES OF MINERAL LAND CONTROLLED, CLASSIFIED ACCORDING TO FORM OF TENURE: 1919.

REGION AND STATE.	ALL CLASSES.				ENTERPRISES OPERATING ONLY OWNED LAND.			ENTERPRISES OPERATING ONLY LAND HELD UNDER LEASE.			ENTERPRISES OPERATING LAND PARTLY OWNED AND PARTLY HELD UNDER LEASE.					
	Number of enterprises.	Acres controlled.				Number.	Acres controlled.		Number.	Acres controlled.		Number.	Acres controlled.			
		Aggregate.	By ownership.	By lease.	Per cent owned is of aggregate.		By ownership.	Per cent of aggregate.		By lease.	Per cent of aggregate.		Total.	Per cent of aggregate.	By ownership.	By lease.
UNITED STATES.....	308	247,082	179,635	67,447	72.7	99	163,059	66.0	184	40,691	16.5	25	43,332	17.5	16,576	26,756
Producing enterprises.....	290	242,576	177,296	65,280	73.1	95	160,799	66.3	171	38,726	16.0	24	43,051	17.7	16,497	26,554
LAKE SUPERIOR REGION.....	160	45,759	10,788	34,971	23.6	10	3,346	7.3	135	22,464	49.1	15	19,949	43.6	7,442	12,507
Michigan.....	65	20,151	4,775	15,376	23.7	8	2,288	11.3	47	9,904	49.1	10	7,961	39.5	2,489	5,472
Minnesota.....	89	22,908	4,073	18,835	17.8	.....	.....	.....	86	12,160	53.1	3	10,748	48.9	4,073	6,675
Wisconsin.....	6	2,700	1,940	760	71.9	2	1,060	39.3	2	400	14.8	2	1,240	45.9	890	360
SOUTHEASTERN REGION.....	88	110,491	99,750	10,741	90.3	61	98,905	89.4	22	6,054	5.5	5	5,632	5.1	945	4,687
Alabama.....	39	65,208	64,631	577	99.1	32	64,578	99.0	6	497	0.8	1	133	0.2	53	80
Georgia.....	9	2,770	2,160	610	78.0	3	2,160	78.0	6	610	22.0	.....	.....	.....	.....	.....
Maryland and North Carolina.....	7	4,267	4,267	.....	14.5	5	337	7.9	1	50	1.2	.....	.....	.....	.....	.....
Tennessee.....	12	4,494	1,386	3,108	30.8	6	1,140	25.4	4	2,886	64.2	2	468	10.4	246	222
Virginia.....	21	33,752	30,956	2,796	91.7	15	30,590	90.6	5	2,011	6.0	1	1,151	3.4	806	785
NORTHEASTERN REGION.....	19	38,186	20,028	18,158	52.4	11	11,918	31.2	4	8,798	23.0	4	17,470	45.7	8,110	9,360
New York.....	7	20,121	8,461	11,660	42.1	4	2,711	13.5	1	8,400	41.7	2	9,010	44.8	5,750	3,260
Connecticut, Massachusetts, New Jersey, and Pennsylvania.....	12	18,065	11,567	6,498	64.0	7	9,207	51.0	3	398	2.2	2	8,460	46.8	2,360	6,100
CENTRAL REGION <sup>1</sup> .....	10	43,732	42,947	785	98.2	4	42,947	98.2	6	785	1.8	.....	.....	.....	.....	.....
WESTERN REGION <sup>2</sup> .....	13	4,408	3,783	625	85.8	9	3,783	85.8	4	625	14.2	.....	.....	.....	.....	.....
Nonproducing enterprises.....	18	4,506	2,339	2,167	51.9	4	2,260	50.2	13	1,965	43.6	1	281	6.2	79	202
Minnesota.....	10	1,292	.....	1,292	72.8	4	2,260	70.3	10	1,292	100.0	1	281	8.7	79	202
All other states <sup>3</sup> .....	8	3,214	2,339	875	72.8	.....	.....	.....	3	673	20.9	.....	.....	.....	.....	.....

<sup>1</sup> Includes Arkansas, Missouri, and Texas.<sup>2</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming.<sup>3</sup> Includes Alabama, Michigan, Utah, and Wisconsin.

**Royalties.**—The census of 1919 did not distinguish between royalties or rents paid for mineral land and rents of other kinds, but as in the iron-ore mining industry these other rents are generally insignificant, statistics presented on royalties and rents may, where mineral lands are leased, be interpreted as royalties or rents of mineral land. Royalty, which is a compensation for the privilege of mining leased lands, is either a fixed share of the product or a percentage of the value of product.

Table 27, in which the producing enterprises are classified according to form of land tenure, shows for each class the number of enterprises, the quantity and

value of products, and the royalties and rents paid. One-third of the enterprises operated land held by ownership and produced nearly one-seventh of the total output and reported only a very small amount of rents. Three-fifths of the enterprises, producing nearly two-fifths of the total output, operated leased lands only and reported \$14,304,974 in royalties and rents which was approximately three-fifths of all royalties and rents paid. Less than one-tenth of the total number of enterprises operated both owned and leased land, produced 47 per cent of the total output, and reported royalties and rents amounting to \$10,515,923, or 42 per cent of the total for the United States.

**TABLE 27.—QUANTITY AND VALUE OF IRON ORE PRODUCED AND ROYALTIES AND RENTS, FOR PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO TENURE OF MINERAL LAND: 1919.**

REGION AND STATE.	ALL CLASSES.				ENTERPRISES OPERATING ONLY OWNED LAND.			
	Number of enterprises.	Iron ore.		Royalties and rents.	Number.	Iron ore.		Royalties and rents.
		Quantity (tons, 2,240 pounds).	Value.			Quantity (tons, 2,240 pounds).	Value.	
UNITED STATES.....	290	61,173,254	\$217,949,311	\$24,944,936	95	8,586,710	\$27,052,174	\$124,039
<b>LAKE SUPERIOR REGION.....</b>	<b>160</b>	<b>52,781,925</b>	<b>192,945,333</b>	<b>24,408,670</b>	<b>10</b>	<b>1,366,290</b>	<b>6,245,091</b>	.....
Michigan.....	65	15,410,494	60,785,440	6,598,825	8	1,232,912	5,814,901	.....
Minnesota.....	89	36,268,433	128,333,921	17,532,030	.....	.....	.....	.....
Wisconsin.....	6	1,062,948	3,826,572	277,815	2	138,378	430,190	.....
<b>SOUTHEASTERN REGION.....</b>	<b>88</b>	<b>5,770,906</b>	<b>14,818,310</b>	<b>229,902</b>	<b>61</b>	<b>5,415,612</b>	<b>13,721,425</b>	<b>117,398</b>
Alabama.....	39	5,053,035	12,291,799	144,631	32	4,856,366	11,894,677	70,717
Georgia.....	9	71,224	233,487	17,714	3	28,727	112,977	.....
Maryland and North Carolina.....	7	50,135	233,529	3,696	5	15,652	55,738	.....
Tennessee.....	12	232,988	823,407	16,084	6	224,887	620,576	4,656
Virginia.....	21	304,524	1,186,127	47,777	15	290,980	1,037,457	42,025
<b>NORTHEASTERN REGION.....</b>	<b>19</b>	<b>1,914,967</b>	<b>8,548,006</b>	<b>277,625</b>	<b>11</b>	<b>1,101,099</b>	<b>5,702,371</b>	.....
New York.....	7	868,995	5,215,346	91,860	4	705,186	4,013,558	.....
Connecticut, Massachusetts, New Jersey, and Pennsylvania.....	12	1,045,972	3,332,660	185,765	7	395,913	1,688,813	.....
<b>CENTRAL REGION<sup>1</sup>.....</b>	<b>10</b>	<b>74,371</b>	<b>303,448</b>	<b>16,334</b>	<b>4</b>	<b>32,747</b>	<b>116,003</b>	.....
<b>WESTERN REGION<sup>2</sup>.....</b>	<b>13</b>	<b>681,085</b>	<b>1,334,214</b>	<b>12,405</b>	<b>9</b>	<b>669,962</b>	<b>1,267,284</b>	<b>6,641</b>
REGION AND STATE.	ENTERPRISES OPERATING ONLY LAND HELD UNDER LEASE.				ENTERPRISES OPERATING LAND PARTLY OWNED AND PARTLY HELD UNDER LEASE.			
	Number.	Iron ore.		Royalties and rents.	Number.	Iron ore.		Royalties and rents.
		Quantity (tons, 2,240 pounds).	Value.			Quantity (tons, 2,240 pounds).	Value.	
UNITED STATES.....	171	23,947,670	\$79,239,795	\$14,304,974	24	28,638,374	\$111,657,342	\$10,515,923
<b>LAKE SUPERIOR REGION.....</b>	<b>135</b>	<b>23,124,522</b>	<b>77,428,255</b>	<b>13,954,251</b>	<b>15</b>	<b>23,241,113</b>	<b>109,271,987</b>	<b>10,454,419</b>
Michigan.....	47	7,223,265	26,858,564	4,139,201	10	6,954,317	28,111,975	2,459,624
Minnesota.....	86	15,530,951	49,395,114	9,684,665	3	20,727,532	78,937,907	7,847,365
Wisconsin.....	2	370,396	1,174,577	130,385	2	559,264	2,222,105	147,430
<b>SOUTHEASTERN REGION.....</b>	<b>22</b>	<b>282,273</b>	<b>791,594</b>	<b>101,929</b>	<b>5</b>	<b>73,021</b>	<b>305,291</b>	<b>10,575</b>
Alabama.....	6	185,574	359,077	70,314	1	11,095	38,006	3,600
Georgia.....	6	42,497	170,510	17,714	.....	.....	.....	.....
Maryland and North Carolina.....	1	392	1,118	196	1	43,091	176,673	3,500
Tennessee.....	4	50,588	168,863	9,096	2	7,513	33,968	2,332
Virginia.....	5	3,222	92,026	4,609	1	11,322	56,644	1,143
<b>NORTHEASTERN REGION.....</b>	<b>4</b>	<b>489,128</b>	<b>765,571</b>	<b>226,696</b>	<b>4</b>	<b>324,740</b>	<b>2,080,064</b>	<b>50,929</b>
New York.....	1	12,335	67,842	60,000	2	151,474	1,133,946	31,860
Connecticut, Massachusetts, New Jersey, and Pennsylvania.....	3	476,793	697,729	166,696	2	173,266	946,118	19,069
<b>CENTRAL REGION<sup>1</sup>.....</b>	<b>6</b>	<b>40,624</b>	<b>187,445</b>	<b>16,334</b>	.....	.....	.....	.....
<b>WESTERN REGION<sup>2</sup>.....</b>	<b>4</b>	<b>11,123</b>	<b>66,930</b>	<b>5,764</b>	.....	.....	.....	.....

<sup>1</sup> Includes Arkansas, Missouri, and Texas.

<sup>2</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming.

The royalties and rents paid by the iron-ore industry, in the United States as a whole, amounted to 40.78 cents per ton of ore produced, and was 11.4 per cent of the total value of products of the industry.

For the class of enterprises operating leased lands only, royalties amounted to 59.73 cents per ton of ore produced, and constituted 18.1 per cent of the total value of products for that group.

POWER.

Power equipment used: 1919.—The number and horsepower of the several types of prime movers and of the electric motors used by all iron-ore mining enterprises in 1919 are given, by regions and states, in the table of detailed statistics at the end of this report. As there shown, nearly three-fourths of the horsepower

of equipment used by the industry in the United States as a whole was in prime movers of which 85 per cent was in reciprocating steam engines and 10 per cent in steam turbines. The extent of electrification in the industry as a whole is indicated by the ratio of the horsepower of electric motors of all classes to horsepower of prime movers, which was practically 60 per cent.

TABLE 28.—COMPARATIVE STATISTICS, POWER USED, PRODUCING ENTERPRISES: 1919 AND 1909.

REGION AND STATE.	Census Year.	Aggregate horsepower.	PRIME MOVERS.						Electric motors operated by purchased current.		Electric motors run by current generated by the enterprise reporting.		
			Total horsepower.	Steam engines.		Internal-combustion engines.		Water wheels and turbines.		Number.	Horsepower. <sup>1</sup>	Number.	Horsepower.
				Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.				
UNITED STATES.....	1919	370,969	373,477	2,358	259,705	45	5,397	22	8,375	1,341	97,392	1,112	67,595
	1909	346,634	342,069	3,563	325,753	27	2,651	30	12,665	55	4,465	326	13,295
	Per cent of increase <sup>2</sup> .....	7.0	-20.1	-33.8	-20.5	.....	103.6	.....	-33.9	.....	2,081.2	241.1	408.4
LAKE SUPERIOR REGION.....	1919	285,215	208,494	1,903	199,448	22	821	20	8,225	1,014	76,721	946	54,620
	1909	262,470	262,305	2,739	249,966	11	109	24	12,210	13	165	271	11,087
	Per cent of increase <sup>2</sup> .....	8.7	-20.5	-30.5	-20.2	.....	653.2	.....	-32.6	.....	.....	249.1	368.6
Michigan.....	1919	142,559	94,778	668	86,629	4	49	16	8,100	507	47,781	504	40,572
	1909	106,427	108,262	1,205	96,017	4	35	24	12,210	13	165	149	7,341
	Per cent of increase <sup>2</sup> .....	31.5	-12.5	-44.6	-9.8	.....	.....	.....	-33.7	.....	.....	238.3	452.7
Minnesota.....	1919	135,924	110,831	1,216	110,059	18	772	.....	.....	462	25,093	436	13,563
	1909	145,068	145,068	1,412	145,010	5	58	.....	.....	.....	.....	121	4,333
	Per cent of increase <sup>2</sup> .....	-6.3	-23.6	-13.9	-24.1	.....	.....	.....	.....	.....	.....	260.3	212.7
Wisconsin.....	1919	6,732	2,885	19	2,760	.....	.....	4	125	45	3,847	6	385
	1909	8,975	8,975	122	8,969	2	16	.....	.....	.....	.....	1	8
	Per cent of increase <sup>2</sup> .....	-25.0	-67.9	-84.4	-68.2	.....	.....	.....	.....	.....	.....	.....	.....
SOUTHEASTERN REGION.....	1919	44,828	36,648	357	36,595	3	53	.....	.....	105	3,180	23	4,674
	1909	48,724	48,724	546	48,456	4	63	4	205	.....	.....	8	96
	Per cent of increase <sup>2</sup> .....	-8.0	-24.8	-34.6	-24.5	.....	.....	.....	.....	.....	.....	.....	.....
Alabama.....	1919	36,890	28,720	251	28,690	1	30	.....	.....	105	3,170	26	4,614
	1909	31,838	31,838	268	31,838	.....	.....	.....	.....	.....	.....	6	50
	Per cent of increase <sup>2</sup> .....	15.9	-9.8	-6.3	-9.9	.....	.....	.....	.....	.....	.....	.....	.....
Georgia.....	1919	1,150	1,150	16	1,150	.....	.....	.....	.....	.....	.....	1	50
	1909	3,496	3,496	41	3,496	.....	.....	.....	.....	.....	.....	.....	.....
	Per cent of increase <sup>2</sup> .....	-67.1	-67.1	.....	-67.1	.....	.....	.....	.....	.....	.....	.....	.....
Tennessee.....	1919	3,659	3,649	47	3,646	1	3	.....	.....	.....	10	.....	.....
	1909	5,581	5,581	74	5,571	1	10	.....	.....	.....	.....	1	25
	Per cent of increase <sup>2</sup> .....	-34.4	-34.6	.....	-34.6	.....	.....	.....	.....	.....	.....	.....	.....
Virginia.....	1919	2,304	2,304	34	2,304	.....	.....	.....	.....	.....	.....	1	10
	1909	6,458	6,458	141	6,200	3	53	4	205	.....	.....	1	20
	Per cent of increase <sup>2</sup> .....	-64.3	-64.3	-75.9	-62.8	.....	.....	.....	.....	.....	.....	.....	.....
Other states <sup>3</sup> .....	1919	825	825	9	805	1	20	.....	.....	.....	.....	.....	.....
	1909	1,351	1,351	22	1,351	.....	.....	.....	.....	.....	.....	.....	.....
	Per cent of increase <sup>2</sup> .....	-38.9	-38.9	.....	-40.4	.....	.....	.....	.....	.....	.....	.....	.....
NORTHEASTERN REGION.....	1919	39,493	24,142	75	20,392	3	3,600	2	150	218	12,351	124	7,968
	1909	33,261	28,961	250	26,250	10	2,461	2	250	42	4,300	41	1,511
	Per cent of increase <sup>2</sup> .....	9.7	-16.6	-70.0	-22.3	.....	46.3	.....	-40.0	.....	187.3	.....	428.3
New York.....	1919	21,172	13,175	30	13,025	.....	.....	2	150	167	7,997	43	2,984
	1909	22,620	18,220	124	17,223	6	747	2	250	42	4,300	30	986
	Per cent of increase <sup>2</sup> .....	-6.0	-27.7	-75.8	-24.4	.....	.....	.....	-40.0	.....	88.0	.....	208.9
Other states <sup>4</sup> .....	1919	15,321	10,967	45	7,367	3	3,600	.....	.....	51	4,354	81	4,990
	1909	10,741	10,741	128	9,027	4	1,714	.....	.....	.....	.....	11	545
	Per cent of increase <sup>2</sup> .....	42.6	2.1	-64.3	-18.4	.....	110.0	.....	.....	.....	.....	.....	817.2
CENTRAL REGION <sup>5</sup> .....	1919	1,223	1,223	8	1,005	6	218	.....	.....	.....	.....	.....	.....
	1909	403	403	13	891	1	12	.....	.....	.....	.....	.....	.....
	Per cent of increase <sup>2</sup> .....	203.5	203.5	.....	157.0	.....	.....	.....	.....	.....	.....	.....	.....
WESTERN REGION <sup>6</sup> .....	1919	3,110	2,970	15	2,265	11	705	.....	.....	4	140	14	413
	1909	1,678	1,678	15	1,670	1	6	.....	.....	.....	.....	6	2
	Per cent of increase <sup>2</sup> .....	85.6	77.2	.....	35.6	.....	.....	.....	.....	.....	.....	.....	.....

<sup>1</sup> Includes 10 horsepower reported for equipment other than electric motors.  
<sup>2</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.  
<sup>3</sup> Includes Maryland and North Carolina for 1919 and 1909, and also Kentucky and West Virginia for 1909.  
<sup>4</sup> Includes Connecticut, Massachusetts, New Jersey, and Pennsylvania for 1919, and also Ohio for 1909.  
<sup>5</sup> Includes Arkansas, Missouri, and Texas for 1919 and Missouri and Texas for 1909.  
<sup>6</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming for 1919 and Colorado, Nevada, New Mexico, Utah, and Wyoming for 1909.

For producing mines in the Northeastern region the horsepower of all electric motors was about four-fifths, in the Lake Superior Region more than three-fifths, and in the Southeastern Region about one-third of the horsepower of prime movers.

Comparative statistics for power, by regions and states: 1919 and 1909.—Table 28 shows for the iron-ore mining industry in the United States as a whole, and by mining regions and states, the number and horsepower of prime movers and electric motors used by producing enterprises and also the per cent increase or decrease for the decade for each class of equipment. The table shows, for the industry as a whole and for the Lake Superior Region, a small increase in the aggregate horsepower used, whereas there was some decrease in the Southeastern Region and some important states. There was a decrease of 20.1 per cent in horsepower of prime movers used in the industry throughout the United States, and an extraordinarily large increase in electric motors operated by purchased current, which amounted to more than 2,000 per cent. In 1909, 98.7 per cent of the aggregate horsepower used was in prime movers, and 1.3 per cent in electric motors operated by purchased current. In 1919 the horsepower of prime movers was 73.7 per cent, and the horsepower of electric motors operated by purchased current constituted 26.3 per cent of the aggregate horsepower. The change was most marked in the Lake Superior Region where the horsepower of electric motors operated by purchased current in 1909 was less than one-tenth of 1 per cent and in 1919 amounted to 26.9 per cent of the aggregate horsepower used. A large increase in the number of electric motors operated by current generated by the enterprises reporting them is shown for the United States as a whole and for each of the mining regions.

FUEL USED.

Table 29 presents for all iron-ore mining enterprises in the United States and for mining regions and states, the quantities of fuel used by kinds. The industry used bituminous coal almost exclusively except in the Northeastern Region where more anthracite than bituminous coal was used.

TABLE 29.—FUEL USED, ALL ENTERPRISES: 1919.<sup>1</sup>

REGION AND STATE.	COAL.		Coke (tons, 2,000 pounds).	Wood (cords).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).
	Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).				
UNITED STATES ...	69,753	1,532,110	30,057	1,262	3,807	3,633
Producing enterprises.	69,753	1,499,612	24,070	912	3,807	3,550
LAKE SUPERIOR REGION....	4,590	1,172,787	1,112	322	1,798	2,574
Michigan.....	1,332	431,760	255	.....	310	253
Minnesota.....	3,248	714,873	758	322	1,200	2,223
Wisconsin.....	.....	26,154	99	.....	288	98
SOUTHEASTERN REGION....	.....	272,423	17,072	190	60	47
Alabama.....	.....	217,263	17,072	.....	50	.....
Georgia.....	.....	7,361	.....	.....	.....	.....
Maryland and North Carolina.....	.....	15,346	.....	.....	10	45
Tennessee.....	.....	19,523	.....	20	.....	2
Virginia.....	.....	12,930	.....	170	.....	.....
NORTHEASTERN REGION....	65,173	44,379	722	.....	179	553
New York.....	43,557	15,801	670	.....	149	424
Connecticut, Massachusetts, New Jersey, and Pennsylvania.....	21,616	28,578	52	.....	30	124
CENTRAL REGION <sup>2</sup> .....	.....	1,500	5,150	400	180	88
WESTERN REGION <sup>3</sup> .....	.....	3,523	14	.....	1,590	288
Nonproducing enterprises.....	.....	32,498	5,987	350	.....	83
Minnesota.....	.....	12,358	.....	.....	.....	50
All other <sup>4</sup> .....	.....	20,140	5,987	350	.....	33

<sup>1</sup> In addition to the fuels shown there was 89,354 M cubic feet of manufactured gas used in Pennsylvania.

<sup>2</sup> Includes Arkansas, Missouri, and Texas.

<sup>3</sup> Includes California, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming.

<sup>4</sup> Includes Alabama, Michigan, Utah, and Wisconsin.

GENERAL TABLE.

Table 30 presents in detail for 1919 statistics relating to iron-ore mines for the United States as a whole, for each of the mining regions, and for each of the states which can be shown separately without disclosure of individual operations. It shows separately statistics for the enterprises and mines which produced ore in 1919 and for those enterprises in which all operations were confined to development work. The table gives the number of enterprises and mines; the acreage of land controlled according to character of land, and classified according to form of tenure in the case of mineral land; persons engaged, by classes and occupations; capital invested; the principal expenses of operation and development; the quantity and value of products; and statistics with regard to power equipment used.

TABLE 30.—DETAILED STATISTICS FOR THE IRON-ORE

REGION AND STATE.	Number of enterprises.	Number of mines.	Number of enterprises operating beneficiating plants.	LAND CONTROLLED (ACRES).				PERSONS ENGAGED IN INDUSTRY.								
				Mineral land.			Timber and other lands.	Aggregate.	Proprietors and officials.					Clerks and other subordinate salaried employees.		
				Operated.	Owned.	Held under lease.			Total.	Proprietors and firm members.		Salaried officers.	Superintendents and managers.			Technical employees.
										Total.	Performing manual labor.			Male.	Female.	
1 United States.....	308	424	74	248,014	179,636	67,447	696,744	49,417	1,315	41	9	134	631	507	1,470	293
2 Producing enterprises....	290	406	74	241,508	177,296	65,230	696,140	48,767	1,286	41	9	130	616	499	1,464	286
3 Lake Superior Region.....	160	249	19	44,696	10,788	34,971	492,577	35,785	947	5	.....	91	428	423	1,117	180
4 Michigan.....	65	100	2	20,025	4,775	15,376	232,798	17,169	462	2	.....	40	185	235	447	100
5 Minnesota.....	89	141	16	21,971	4,073	18,835	259,690	17,422	463	2	.....	50	232	179	649	74
6 Wisconsin.....	6	8	1	2,700	1,940	760	89	1,194	22	1	.....	1	11	9	21	6
7 Southeastern Region.....	88	110	43	110,491	99,750	10,741	66,759	8,818	176	14	1	12	112	38	240	78
8 Alabama.....	39	48	20	65,206	64,631	577	52,413	6,877	110	2	1	8	69	31	212	70
9 Georgia.....	9	9	7	2,770	2,160	610	400	229	9	2	.....	6	1	5	.....	.....
10 Maryland and North Carolina. <sup>1</sup>	7	7	5	4,267	617	3,650	.....	190	11	8	.....	1	1	2	.....	.....
11 Tennessee.....	12	24	6	4,494	1,396	3,108	7,050	859	19	2	.....	2	13	2	14	2
12 Virginia.....	21	22	5	33,752	30,956	2,796	6,891	663	27	.....	.....	1	23	3	7	6
13 Northeastern Region.....	19	21	11	88,186	20,028	18,158	116,463	3,383	115	9	.....	19	55	32	85	23
14 New York.....	7	7	3	20,121	5,461	11,660	116,429	1,943	53	1	.....	11	24	17	63	16
15 Connecticut, Massachusetts, New Jersey, and Pennsylvania. <sup>2</sup>	12	14	8	18,065	11,567	6,498	34	1,440	62	8	.....	8	31	15	22	7
16 Central Region <sup>3</sup> .....	10	10	.....	43,727	42,947	785	20,341	216	19	3	1	6	8	2	5	4
17 Western Region <sup>4</sup> .....	13	16	1	4,408	3,783	625	.....	665	29	10	7	2	13	4	7	1
18 Nonproducing enterprises.	18	18	.....	4,506	2,339	2,167	604	650	29	.....	.....	6	15	8	16	7
19 Minnesota.....	10	10	.....	1,292	.....	1,292	240	302	15	.....	.....	6	6	3	8	4
20 All other <sup>5</sup> .....	8	8	.....	3,214	2,339	875	364	348	14	.....	.....	.....	9	5	8	3

REGION AND STATE.	Capital.	PRINCIPAL EXPENSES OF OPERATION AND DEVELOPMENT.									
		Total.	Salaries and wages.			Supplies and materials.	Cost of fuel.	Cost of purchased power.	Royalties and rents.	Taxes—Federal, state, county, and local.	Contract work.
			Salaried officers, superintendents, managers, and technical employees.	Clerks and other subordinate salaried employees.	Wage earners.						
1 United States.....	Dollars. 512,290,704	Dollars. 189,791,617	Dollars. 4,276,068	Dollars. 2,709,476	Dollars. 76,696,851	Dollars. 27,841,973	Dollars. 8,670,864	Dollars. 1,636,874	Dollars. 28,080,818	Dollars. 31,150,247	Dollars. 2,469,117
2 Producing enterprises....	501,396,044	177,578,869	4,196,832	2,737,828	75,713,459	27,187,832	8,700,358	1,594,821	24,944,836	30,899,610	1,671,783
3 Lake Superior Region.....	427,149,435	154,073,424	3,300,654	2,147,612	62,392,500	22,211,944	6,884,147	1,284,938	24,408,670	29,943,160	1,499,799
4 Michigan.....	116,799,325	56,259,260	1,580,418	800,807	32,186,404	7,845,035	2,669,223	769,457	6,598,525	3,785,506	23,580
5 Minnesota.....	304,386,006	94,659,227	1,637,664	1,313,203	23,533,475	13,870,897	4,069,293	455,323	17,532,030	26,018,086	1,444,256
6 Wisconsin.....	5,963,604	3,154,937	82,572	33,602	1,872,621	496,012	155,626	60,158	277,515	144,568	31,963
7 Southeastern Region.....	23,846,543	13,381,053	469,310	405,092	8,383,661	2,158,940	1,065,275	105,749	229,902	498,626	74,496
8 Alabama.....	17,349,604	10,723,357	364,428	371,540	6,810,301	1,596,074	846,968	106,629	144,631	409,268	74,496
9 Georgia.....	215,516	283,453	11,750	3,605	131,282	38,741	39,183	.....	17,714	21,178	.....
10 Maryland and North Carolina. <sup>1</sup>	161,993	399,952	6,097	1,310	206,219	115,857	65,698	.....	3,696	1,075	.....
11 Tennessee.....	3,783,115	890,826	40,913	12,900	583,033	169,791	61,786	120	16,064	6,199	.....
12 Virginia.....	2,331,315	1,103,465	46,122	15,737	662,826	238,477	51,645	.....	47,777	50,881	.....
13 Northeastern Region.....	43,635,788	8,598,746	346,910	161,063	4,067,176	2,512,034	601,034	199,402	277,625	348,740	79,730
14 New York.....	35,272,596	4,954,685	184,362	130,363	2,365,596	1,484,681	350,522	118,387	91,860	184,107	44,778
15 Connecticut, Massachusetts, New Jersey, and Pennsylvania. <sup>2</sup>	8,363,192	3,639,061	162,548	30,700	1,701,583	1,027,353	250,512	81,015	185,765	164,633	34,952
16 Central Region <sup>3</sup> .....	2,802,002	356,575	27,878	10,163	153,770	42,488	78,459	.....	16,334	12,393	15,090
17 Western Region <sup>4</sup> .....	3,962,276	1,174,071	54,080	13,868	716,350	262,426	71,443	4,142	12,406	36,691	2,666
18 Nonproducing enterprises	10,894,660	3,312,948	76,266	31,647	885,092	654,141	170,506	41,343	135,962	330,637	797,334
19 Minnesota.....	6,427,966	2,027,079	29,430	12,401	452,071	340,312	78,209	27,028	103,691	308,192	675,795
20 All other <sup>5</sup> .....	4,456,694	1,185,869	46,786	19,246	533,021	313,829	92,297	14,315	32,391	12,445	121,539

<sup>1</sup> Includes enterprises as follows: Maryland, 1; North Carolina, 6.  
<sup>2</sup> Includes enterprises as follows: Connecticut, 1; Massachusetts, 1; New Jersey, 5; Pennsylvania, 5.  
<sup>3</sup> Includes enterprises in states as follows: Arkansas, 1; Missouri, 8; Texas, 1.

MINING INDUSTRY, BY REGIONS AND STATES: 1919.

PERSONS ENGAGED IN INDUSTRY—continued.

Wage earners.		Wage earners, Dec. 15, or nearest representative day.														In mills and beneficiating plants (above ground).	Under 16 years of age (above ground).	Females (above ground).
Average number.	Number, 15th day of—		Total.		Foremen, shift bosses, etc.		Engineers, hoistmen, electricians, mechanics, etc.		Miners and drillers, including their helpers.		Timberman, trackmen, and men engaged in hauling, tramming, etc.		Muckers, loaders, laborers, and others not classified.					
	Maximum month.	Minimum month.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.				
44,339	Ja 44,312	De 43,065	19,475	24,909	909	894	6,877	1,077	1,400	15,393	1,735	5,576	7,586	5,909	1,968	6	8	1
45,741	Ja 47,493	De 42,555	19,050	24,690	739	878	6,598	1,063	1,354	15,326	1,677	5,495	7,436	5,938	1,968	6	7	2
33,541	Jy 34,983	De 30,819	13,368	21,332	569	607	5,169	725	699	12,609	1,231	4,302	5,236	3,089	474	2	6	3
16,160	Mh 16,670	De 15,582	4,760	11,591	157	323	1,916	399	117	7,060	469	2,699	2,068	1,120	33	2	4	4
16,296	Jy 17,753	De 14,119	8,350	8,777	400	249	3,165	253	552	4,974	1,431	1,431	3,062	1,870	439	2	2	5
1,145	Fe 1,242	Se 1,047	258	964	12	35	88	73	20	585	20	172	116	99	2			6
8,324	Ja 9,691	Je 6,716	3,798	5,357	144	154	866	150	469	2,005	359	1,049	1,470	1,999	490			7
6,485	Ja 7,450	Je 5,213	2,320	4,641	69	139	683	114	136	1,642	206	952	960	1,794	276			8
215	Ja 250	No 162	225	22	7	2	36	2	34	20	67		34	47				9
177			85	44	2	2	7	2	25	2			4	38	47			10
824	Ja 1,007	Je 604	680	315	25	1	80	8	121	201	69	89	322	66	63			11
623	Ja 791	Au 534	498	335	41	10	60	26	153	140	17	58	160	101	57			12
3,160	Ja 4,259	Je 2,555	1,410	1,581	44	91	401	160	69	592	73	84	522	654	301			13
1,811	Ja 2,599	No 1,571	749	883	24	60	150	100	59	254	22	35	321	454	173			14
1,349			661	698	20	31	251	60	10	338	51	49	201	220	128			15
188	My 296	De 140	161	31	12	6	14		55	25	4		76					16
528	Au 717	No 70	313	390	20	20	76	18	72	95	10	60	132	196	3			17
508	Ja 619	Oc 458	485	218	20	16	151	24	46	67	58	81	150	31				18
275	Ja 463	Oc 168	270	59	15	6	73	11	30	8	34	21	118	13				19
323			155	160	5	10	78	13	16	59	24	60	32	18				20

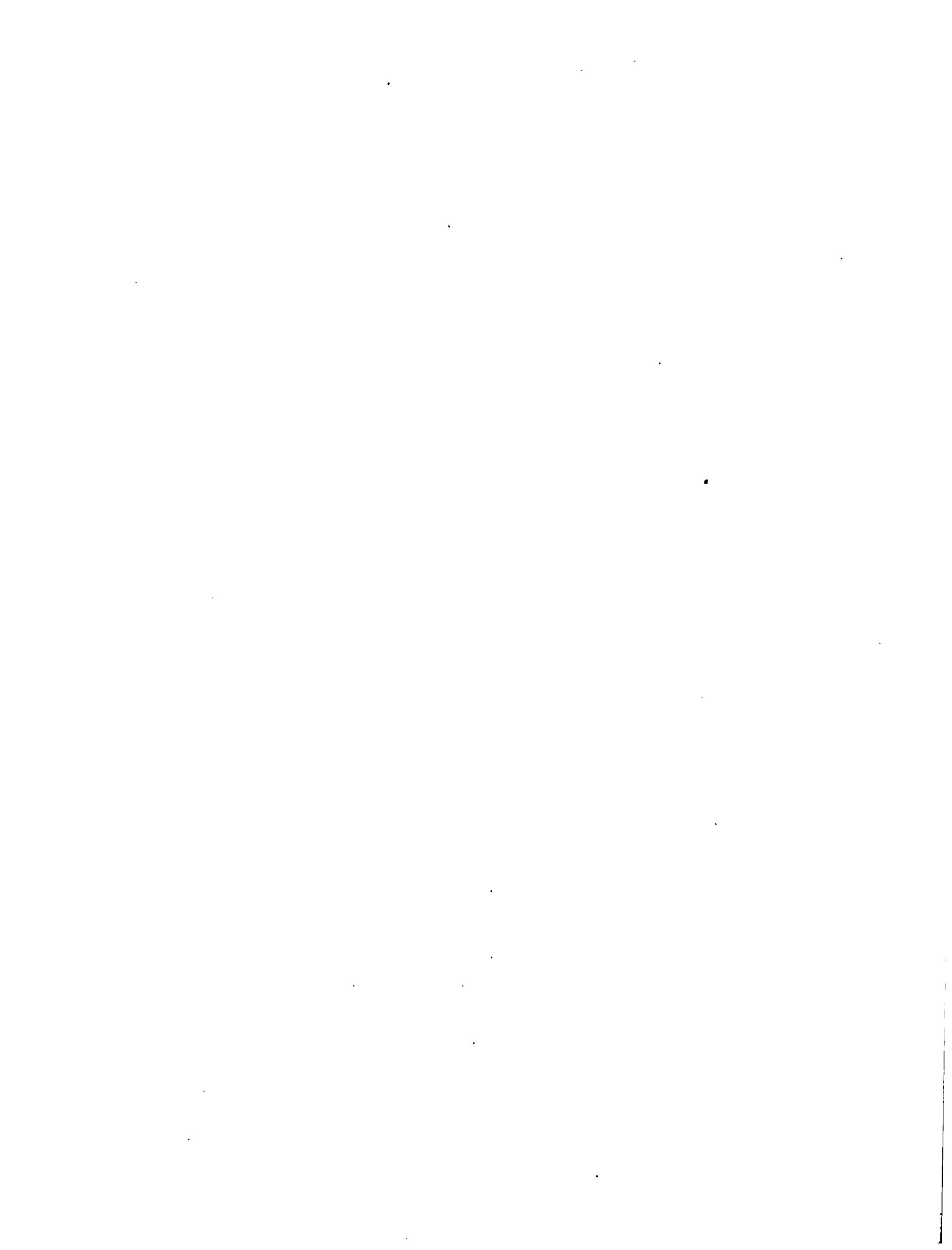
Expenditures for development (included in principal expenses).	Value of products.	Iron ore produced (tons, 2,240 pounds).	POWER USED.														
			Aggregate horsepower.	Prime movers.								Equipment operated by purchased power.*		Electric motors run by current generated by the enterprise reporting.			
				Total horsepower.	Steam engines (not turbines).		Steam turbines.		Internal-combustion engines.		Water wheels, and turbines.		Electric motors.				
					Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.			Horse-power.	Number.
Dollars. 17,369,294	Dollars. 218,217,905	61,178,254	381,044	279,712	2,374	237,385	26	28,521	47	5,431	22	8,375	1,388	101,332	1,118	68,345	2
14,687,841	218,217,905	61,178,254	370,869	273,477	2,333	231,184	26	28,521	45	5,397	22	8,375	1,341	97,392	1,118	67,595	2
12,189,195	193,110,738	52,731,925	285,215	206,494	1,886	180,687	17	18,761	22	821	20	8,225	1,014	76,721	946	54,520	3
1,912,303	60,906,692	15,410,494	142,559	94,778	655	69,497	13	17,132	4	49	16	8,100	507	47,781	504	40,572	4
9,812,648	128,377,174	36,258,483	135,024	110,831	1,212	108,430	4	1,629	18	772			462	25,063	436	13,563	5
464,154	8,826,872	1,082,948	6,732	2,885	19	2,760					4	125	45	3,847	6	385	6
499,867	14,824,021	5,770,906	44,828	36,648	357	36,595			3	53			105	8,180	28	4,674	7
359,208	12,291,760	5,053,035	36,990	28,720	251	28,690			1	30			105	8,170	25	4,614	8
3,000	283,487	71,224	1,150	1,150	16	1,150									1	50	9
3,662	233,529	59,135	825	825	9	805			1	20							10
102,871	829,118	282,988	3,659	3,649	47	3,646			1	3				6	10		11
31,136	1,186,127	304,524	2,304	2,304	34	2,304									1	10	12
1,811,002	8,636,226	1,914,967	36,463	24,142	67	10,632	8	9,760	3	3,600	2	150	218	12,351	124	7,983	13
922,865	5,264,443	898,995	21,172	24	24	4,405	6	8,620			2	150	167	7,997	43	2,984	14
888,137	3,371,783	1,045,972	15,321	10,967	43	6,227	2	1,140	3	3,000			51	4,354	81	4,999	15
180,096	303,948	74,371	1,223	1,223	8	1,005			6	218							16
7,682	1,342,972	681,085	3,110	2,970	15	2,265			11	705			4	140	14	418	17
2,792,483			10,175	6,235	41	6,201			2	34			44	3,940	6	750	18
1,583,584			3,816	1,875	22	1,866			1	9			25	1,941			19
1,118,869			6,359	4,360	19	4,335			1	25			19	1,999	6	750	20

\* Includes enterprises in states as follows: California, 1; Idaho, 1; Montana, 2; New Mexico, 5; Utah, 2; Washington, 1; Wyoming, 1.

† Includes enterprises in states as follows: Alabama, 2; Michigan, 3; Utah, 1; Wisconsin, 2.

‡ Includes 10 horsepower reported for equipment other than electric motors.





# GOLD, SILVER, COPPER, LEAD, AND ZINC.

## INTRODUCTION.

**Scope of the report.**—This report presents the results of the census of mines and quarries for the year 1919 for the gold, silver, copper, lead, and zinc mining industries. It includes statistics showing: The geographic distribution of the industries by states and mining regions; the progress of the industries by comparison of results of the present census with those of the two preceding censuses of mines and quarries; the character of organization and the size of operating enterprises; persons engaged in the industry; and the acreage of mineral and other lands controlled. It includes also statistics in regard to power equipment and fuel used, and a general table presenting statistics in detail for the combined metal-mining industries in the United States, and separately for each industry and for such states in each industry that can be shown without disclosure of individual operations.

**Definitions and explanations.**—This report relates to the mining of materials valuable for their content of one or more of the following metals: Gold, silver, copper, lead, and zinc. Incidentally, there are included in this report with the statistics of gold and silver mining, statistics in regard to the production of platinum and related metals. The report covers mining activities in which two major classes of metal mining are distinguished on the bases of the nature of the ground exploited, the materials produced, and the character of operations. These classes are the mining or the production of metalliferous ores principally from firm rock formations, and placer mining or the production of crude metallic gold (and platinum, etc.) from sand and gravel. Enterprises in the first class are designated in this report "lode mines," which term is synonymous with the term "deep mines" as used in the 1909 census of mines and quarries and in the reports of the United States Geological Survey. The term lode mines is used for convenience only. It comprises the mining of all types of deposits, other than placer deposits, and thus includes many mines which are not lodes in a geological sense. Mines of gold, silver, copper, lead, and zinc ores collectively considered are referred to as metalliferous lode mines.

The statistics on metalliferous lode mining in this report are presented for three industries, gold and silver, copper, and lead and zinc mining. The assignment of the mining enterprises to these industries at the census of 1919 was based on the metal of predominant worth in the ores produced and disposed

of during the census year. This classification is necessarily arbitrary because most mines produce ores which contain two or more of the metals, although some mines produce ores which are distinctly or solely gold or silver or copper or lead or zinc ores. This classification of enterprises resulted in groupings of enterprises essentially similar to those made by the census of 1909 except that at the census of 1909 enterprises producing argentiferous lead and zinc ores, whether or not silver predominated, were classified as silver-mining enterprises and assigned to the gold and silver-mining industry. Unfortunately, under any system based on the value of the metal content of the ores, the classification of individual mines would change from time to time, because of price changes and because the relative proportion of metals contained in the ores of many mines is different in different parts of the mines in ores mined at different times. Thus, certain large enterprises classified as copper mines for the year 1909 were classified as lead and zinc mines for 1919, and some mines which are essentially zinc mines were classified as silver mines for 1919 when, on account of the low price for zinc and the high price for silver, only the ores richer in silver could be profitably mined.

The statistics relating to nonproducing enterprises in the metal-mining industries, including metalliferous lode mines and placer mines, are presented as a unit. Operations for development only were not classified because returns for placer mining were received from only a few unimportant enterprises, and classification of lode mining on the basis of metal of predominant worth in the ores mined was not possible because no product was reported.

Ores of the metals gold, silver, copper, lead, and zinc require dressing and metallurgical processes for the recovery of their metal content. Ore dressing, including concentration, and the metallurgical processes such as amalgamating, cyaniding, roasting, and leaching and precipitation, are classified by the census as processes of beneficiation and therefore a part of mining. Statistics for such operations, whether conducted by the mine operators at the mines or elsewhere, or by independent operators, are included in this report. On the other hand, the final processes in the extraction of the metals in smelters and refineries, including electrolytic refineries, are manufacturing operations and statistics for these operations were excluded from the census of mines and quarries in 1919. In this respect, therefore, the statistics of the

census of mines and quarries for 1919 are not comparable with those for 1909 which included data for some smelters and refineries.

In general, schedules were secured for mining and milling separate from the manufacturing operations, refining and smelting. Some operators, however, submitted consolidated or partly segregated returns on mining and manufacturing operations. Such reports were segregated for tabulation by estimated allotments to mining and to manufacturing based on information supplied by the operators, and on available well-established data from other sources.

The statistics for the metal-mining industries include operations on dumps and old tailings. Except where especially segregated or omitted, statistics for such enterprises are combined with statistics for lode mines.

It is a common practice in metal-mining industries, in some districts, for controlling organizations to lease mining enterprises in whole, or in part, and sometimes in several parcels or blocks to different operators. At the census of 1919 efforts were made to secure reports from the actual operators, and, so far as possible, the statistics are based on the reports of such operators rather than on reports secured from the nonoperating organizations. The statistics, therefore, are different as to number of enterprises or mines, the acreage controlled, capital invested, size and character of operating organizations, and value of products from statistics which would have been obtained from reports of fee owners or primary lessees. Such differences would be particularly marked in the lead and zinc mining industry in the Central Region.

**Method of reporting quantity and value of products.**—The values of products reported by the Bureau of the Census for the metal-mining industries are based on the net amounts received f. o. b. mines or mills by the operators for ore, concentrates, precipitates, and bullion, or the estimated equivalent of sales values of such products when these were further treated (smelted or refined) by the miner. The values so reported are not the value of the metals produced or recoverable from these materials by smelting and refining, but are less by at least the cost of transportation to treatment plants, treatment charges, and the cost of marketing the metals. The statistics of the production of metal mines were collected in cooperation with the United States Geological Survey for which purpose there was provided, in addition to the general schedule of the census, supplemental schedules requesting special information desired by the Geological Survey.

The schedules for metalliferous lode mines, requested the quantity of crude ore mined, quantity of crude ore

treated, the kind of treatment process, the character of products, and the quantity of metals contained in or recoverable from the ores, concentrates, or other materials produced. This information furnished a basis on which to classify the enterprises according to the metal of principal worth produced and the treatment or beneficiating process practiced; and it also served as a basis for checking, and for estimating when necessary, the value of receipts to the operator which was the value of products required by the census general schedule and which has been tabulated by the Census Bureau. The Geological Survey has tabulated the total quantity of ore mined and also the quantities of concentrates and other materials produced but has not tabulated the actual value of these products to the mine operators. It shows as value of product of the metal mines the full market value of the metals produced or recoverable from the mine and mill products. There is no simple or uniform relation between the value of metals mined, as reported by the Geological Survey, and the value of the products of the metal-mining industries, as reported by the Bureau of the Census.

The supplemental schedule for placer mines requested information relating to the character, quantity, fineness, and value of products recovered, and also information in regard to character and quantity of materials handled, the machinery used, and the method of operation. The supplemental schedule thus served to classify the enterprises according to mining methods and as a basis for checking, or supplying by estimate when necessary, the value of receipts to the operator which was the value of products required by the census general schedule and which has been tabulated by the Census Bureau.

The products of the metal-mining industries being of many kinds—ores having wide range in metal content, concentrates of varying richness and derived by various ratios of reduction from the ores, and bullion of many grades of fineness—there is no common measure of quantity. The nearest approach to comparable data on the quantity of products of the metal-mining industries, as defined by the census, is the quantity of ore mined. Such data are available only for the metal-mining industries combined, and are shown in Table 1, together with the metal content of the ores. This table is based upon data supplied by the United States Geological Survey and is substantially a compilation of statistics published in the state reports on metal mining contained in "Mineral Resources of the United States: 1919, Part 1, Metals."

TABLE 1.—PRODUCTS OF GOLD, SILVER, COPPER, LEAD, AND ZINC MINES: 1919 (BASED ON DATA SUPPLIED BY UNITED STATES GEOLOGICAL SURVEY).

STATE.	LODE MINES.					PLACER MINES.		
	Total ores (tons, 2,000 pounds).	Metal content of ores.					Metal content of crude product. <sup>1</sup>	
		Gold (fine ounces).	Silver (fine ounces).	Copper (tons, 2,000 pounds).	Lead (tons, 2,000 pounds).	Zinc (tons, 2,000 pounds).	Gold (fine ounces).	Silver (fine ounces).
UNITED STATES (exclusive of Alaska).....	61,839,245	1,833,344.20	51,224,338	582,555	443,007	549,242	468,953.49	45,418
<b>EASTERN STATES</b> .....	1,930,411	306.55	104,682	8,298	2,189	121,279	34.59	8
Georgia and Alabama.....	353	2.51	.....	4	.....	.....	34.59	8
New Hampshire.....	.....	.....	.....	.....	1	.....	.....	.....
Maine.....	12,000	7.01	4,142	188	.....	.....	.....	.....
North Carolina and South Carolina.....	33	4.89	38	3	.....	.....	.....	.....
Tennessee.....	1,237,534	273.90	98,268	7,812	2,188	28,247	.....	.....
Vermont.....	23,400	18.24	2,214	291	.....	.....	.....	.....
New Jersey.....	615,680	.....	.....	.....	.....	92,912	.....	.....
New York.....	51,411	.....	.....	.....	.....	5,120	.....	.....
<b>CENTRAL STATES</b> .....	23,176,783	.....	536,271	90,222	234,878	305,364	.....	.....
Arkansas.....	5,800	.....	.....	.....	28	189	.....	.....
Illinois.....	404,000	.....	4,440	.....	2,105	6,788	.....	.....
Kansas.....	1,391,600	.....	.....	.....	11,283	47,636	.....	.....
Kentucky.....	( <sup>2</sup> )	.....	.....	.....	86	36	.....	.....
Michigan.....	7,660,253	.....	441,430	89,413	.....	.....	.....	.....
Missouri.....	5,690,730	.....	90,401	809	163,260	31,540	.....	.....
Oklahoma.....	6,198,200	.....	.....	.....	58,872	178,419	.....	.....
Wisconsin.....	1,826,200	.....	.....	.....	4,214	40,765	.....	.....
<b>WESTERN STATES</b> .....	36,675,051	1,833,037.65	50,583,385	484,035	205,940	122,599	463,918.90	45,410
South Dakota.....	1,330,888	235,230.41	116,496	.....	16	.....	19.16	1
Colorado.....	1,919,768	451,632.14	5,750,867	1,780	18,535	18,610	26,033.44	7,143
Texas.....	54,510	1.21	538,642	( <sup>3</sup> )	7	.....	.....	.....
Wyoming.....	798	4.06	151	70	.....	.....	.....	.....
New Mexico.....	2,155,998	31,477.47	837,385	25,575	1,443	3,797	239.89	33
Idaho.....	1,457,395	25,275.26	5,577,154	1,561	91,171	7,997	9,227.03	1,902
Montana.....	4,183,594	93,758.40	12,538,872	84,991	17,219	84,382	14,097.93	2,309
Utah.....	6,745,423	104,464.41	11,049,961	62,081	61,915	2,216	.....	.....
Nevada.....	3,187,831	213,295.73	6,861,206	26,166	7,675	4,502	6,369.43	2,374
Arizona.....	13,727,403	217,770.65	5,266,569	269,050	5,102	859	227.07	36
California.....	1,714,911	419,066.77	1,079,265	10,866	1,784	.....	388,600.05	27,924
Oregon.....	96,173	28,889.26	107,451	1,107	.....	.....	18,413.99	3,670
Washington.....	100,879	12,171.88	259,366	838	1,073	.....	60.32	18

<sup>1</sup> In addition to the quantities reported, there were approximately 800 crude ounces of platinum from placer mines in California and Oregon.  
<sup>2</sup> No metalliferous ores mined; lead and zinc bearing concentrates obtained solely as by-product in the recovery and concentration of fluorspar.  
<sup>3</sup> Not including 57,000 tons of cobalt-nickel-copper ore.  
<sup>4</sup> Less than 1 ton (979 pounds).

PRINCIPAL STATISTICS.

Producing and nonproducing enterprises, general summary for the United States: 1919.—Table 2 presents the principal statistics for the lode and placer mining industries as a whole, for producing and nonproducing enterprises separately and for producing enterprises for each industry separately. There were 1,979 metal-mining enterprises in 1919 engaged in working 2,142 mines. Of these, 500 enterprises operating 512 mines, or approximately one-fourth of the total number, were unproductive in 1919 and were engaged in development work only. These enterprises with a combined capital amounting to 7.2 per cent of the aggregate for all enterprises, employed 4.3 per cent of the aggregate average number of wage earners, and expended \$12,366,117 for development work, which was approximately 4.5 per cent of the aggregate expenditures for all purposes by all metal-mining enterprises.

Among the producing metal-mining enterprises the mining of copper ores engaged the activities of only 13.2 per cent of the total number of enterprises; but copper mining ranked first on the basis of value of products, \$181,258,087, which was 55.8 per cent of the total value for all producing metal mines, and

first on the basis of average number of wage earners employed, 43,717, which was 53 per cent of the total average number of wage earners for all producing metal mines.

The lead and zinc mining industry embraced 29.2 per cent of the total number of producing enterprises and ranked second on the basis of value of products, \$75,579,347, which was 23.3 per cent of the total for all producing industries, and second on the average number of wage earners, 21,884, which was 26.6 per cent of the total for producing enterprises.

The gold and silver lode-mining industry included one-half of the producing enterprises in the metal-mining industries, but ranked third with value of products amounting to \$58,832,330, or 18.1 per cent of the total value for all producing metal mines, and employed wage earners to the number of 15,436, or 18.7 per cent of the total average number for all producing enterprises.

In the placer-mining industry 112 producing enterprises, or 7.6 per cent of the total number, accounted for products amounting to \$9,368,561, or only 2.9 per cent of the total value of products, and 1,380 wage earners, or 1.7 per cent of the total average number in producing enterprises.

## MINES AND QUARRIES.

TABLE 2.—PRINCIPAL STATISTICS: 1919.

	All enterprises.	PRODUCING ENTERPRISES.					Non-producing enterprises. <sup>1</sup>
		Total.	Copper.	Lead and zinc.	Gold and silver, lode mines.	Gold, placer mines. <sup>1</sup>	
Number of enterprises.....	1,979	1,479	195	432	740	112	500
Number of mines.....	2,142	1,680	226	473	799	132	512
Number of enterprises operating reduction mills in connection with mines.....	512	512	57	262	191	2	.....
Mineral land operated.....acres.....	909,538	733,508	392,811	135,262	142,573	62,857	176,035
Persons engaged.....	94,876	90,211	46,999	24,030	17,531	1,651	4,065
Proprietors and firm members, total.....	1,482	1,349	103	412	712	122	133
Number performing manual labor.....	827	810	62	186	485	77	17
Salaried employees.....	7,286	6,445	3,179	1,734	1,383	149	841
Wage earners (average number).....	86,108	82,417	43,717	21,884	15,436	1,380	3,691
Wage earners, Dec. 15, or nearest representative day—							
Above ground.....	38,770	36,965	20,105	9,471	5,830	1,450	1,905
Below ground.....	57,338	53,968	25,704	15,697	11,492	75	3,421
Power used (aggregate horsepower).....	981,229	938,444	523,591	229,541	149,690	35,632	42,785
Capital.....	\$1,461,086,981	\$1,355,825,983	\$853,639,017	\$197,223,814	\$280,388,711	\$24,574,441	\$105,200,998
Principal expenses:							
Salaries.....	16,572,945	15,317,235	8,089,741	3,894,940	3,005,761	436,793	1,255,710
Wages.....	128,466,888	122,830,242	66,390,194	30,708,319	23,817,657	1,914,072	5,636,646
Contract work.....	3,248,392	2,656,074	421,763	863,471	1,237,043	132,807	593,318
Supplies and materials.....	69,587,270	64,872,542	34,275,369	15,311,548	13,040,897	2,244,728	4,684,728
Cost of ore purchased as material.....	6,602,398	6,602,398	1,528,056	406,051	4,668,291	.....	.....
Fuel.....	16,217,983	15,737,317	11,310,485	2,738,249	1,623,124	20,459	480,666
Purchased power.....	10,011,604	9,607,446	3,555,530	2,591,908	2,336,136	1,123,874	404,158
Royalties and rents.....	6,959,672	6,396,824	536,819	5,258,387	1,015,719	85,890	62,848
Taxes.....	15,375,870	15,237,579	12,236,046	3,326,910	2,325,491	356,132	138,291
Expenditures for development (included in the above items).....	38,001,610	25,635,493	13,302,349	4,258,914	7,962,971	201,260	12,366,117
Value of products.....	325,038,325	325,038,325	181,258,087	75,579,347	58,832,330	9,368,561	.....

<sup>1</sup> Includes platinum and related metals.

The mining of gold, silver, copper, lead, and zinc, taken collectively, ranked third among the mining industries in the United States, on the basis of both the value of products and the average number of wage earners, being exceeded only by coal mining and the production of petroleum and natural gas. But, separately considered, on the basis of value of products the copper-mining industry is fourth, being outranked by the iron-ore-mining industry, the lead and zinc mining industry is fifth, the gold and silver lode-mining industry sixth, and the gold placer-mining industry fourteenth among the mining industries of the United States. On the basis of average number of wage earners employed these industries ranked respectively, fourth, sixth, seventh, and sixteenth.

The amount reported as value of products in Table 2, and other tables of this report, is the aggregate of receipts by all operators, and therefore includes a duplication of \$6,602,398, the cost of gold and silver, copper, lead, and zinc ores purchased by some producers from others and after treatment included in the value of the purchasers' product. The amount of such duplication is shown separately as cost of purchased ore by states for each industry in the table of detailed statistics. The value of products also includes, in addition to the amounts received for products indicated by the industry designations, receipts for other mineral products, for other products not specified, for custom milling and other treatment of ores, etc., for power sold and for work or miscellaneous services for other enterprises. The number of enter-

prises reporting other receipts or by-products and the amount of such receipts from various sources in each of the metal-mining industries is shown in Table 3.

TABLE 3.—OTHER PRODUCTS OF METAL MINES: 1919.

	All industries.	Copper.	Lead and zinc.	Gold and silver, lode mines.	Gold, placer mines.
Number of enterprises reporting.....	113	17	36	46	14
Total value of "by-products".....	\$2,413,063	\$995,982	\$325,827	\$1,022,013	\$99,241
Mineral "by-products"—					
Manganese.....	90,784	.....	.....	90,784	.....
Pyrite.....	78,689	1,853	74,836	.....	.....
Platinum.....	67,675	.....	.....	.....	67,675
Barytes.....	7,600	.....	7,600	.....	.....
Tungsten.....	2,887	2,887	.....	.....	.....
Limestone.....	1,270	.....	1,270	.....	.....
Iron.....	668	668	.....	.....	.....
Product not specified.....	100,530	.....	90,338	1,201	.....
Custom milling.....	1,107,570	271,897	41,484	793,189	1,060
Power sold, work, or miscellaneous services for others.....	967,406	718,632	101,290	136,899	566

## GEOGRAPHIC DISTRIBUTION.

Principal statistics by geographic divisions.—Table 4 presents by the usual geographic divisions the principal statistics for producing and nonproducing enterprises in the metal-mining industries. The table is introduced in order that the statistics for metal-mining industries may be compared or assembled with other census statistics distributed by these geographic divisions. The table shows that the Mountain division was preeminent in these industries, the West Central division second, the East North Central division third, and the Pacific division fourth in importance as measured by value of products.

TABLE 4.—PRINCIPAL STATISTICS FOR LODE AND PLACER MINES COMBINED, PRODUCING AND NONPRODUCING ENTERPRISES: 1919.

Division.	Number of enterprises.	Number of mines.	Wage earners (average number).	Power used (aggregate horse-power).	Capital.	Wages.	Cost of supplies, materials, fuel, and purchased power.	Value of products.
UNITED STATES, all industries.....	1,979	2,142	86,108	981,229	\$1,461,086,961	\$128,466,888	\$102,389,255	\$325,088,325
Producing enterprises.....	1,479	1,630	82,417	938,444	1,355,825,978	122,630,242	96,819,708	325,038,325
Nonproducing enterprises.....	500	512	3,691	42,785	105,260,983	5,686,646	5,569,547	.....
NEW ENGLAND, MIDDLE, AND SOUTH ATLANTIC.....	11	12	2,075	15,723	6,301,277	2,618,419	1,208,226	3,786,277
Producing enterprises.....	7	8	1,909	15,301	5,555,147	2,373,858	1,128,692	3,786,277
Nonproducing enterprises.....	4	4	106	422	746,130	244,561	84,534	.....
EAST NORTH CENTRAL.....	56	78	13,736	182,613	162,122,132	16,539,523	11,777,960	38,014,548
Producing enterprises.....	51	68	13,552	181,325	156,071,498	16,311,199	11,561,233	38,914,548
Nonproducing enterprises.....	5	5	184	1,288	6,050,639	228,324	216,727	.....
EAST SOUTH CENTRAL.....	5	8	1,282	15,967	8,016,676	1,646,278	865,793	3,121,808
Producing enterprises.....	5	8	1,282	15,967	8,016,676	1,646,278	865,793	3,121,808
WEST (NORTH AND SOUTH) CENTRAL.....	261	280	13,216	140,113	90,925,877	17,334,402	12,425,069	45,629,425
Producing enterprises.....	252	271	13,136	138,342	88,236,722	17,237,968	12,263,799	45,629,425
Nonproducing enterprises.....	9	9	80	1,771	2,689,155	96,434	156,270	.....
MOUNTAIN.....	1,346	1,430	49,616	533,181	1,094,789,045	81,798,324	67,296,781	212,319,781
Producing enterprises.....	926	1,006	46,681	505,069	1,014,057,458	77,248,185	62,701,871	212,319,781
Nonproducing enterprises.....	420	425	2,935	38,082	80,731,587	4,550,139	4,584,910	.....
PACIFIC.....	300	339	6,182	88,612	98,931,974	8,539,942	8,325,426	21,263,496
Producing enterprises.....	238	270	5,797	82,360	83,838,487	8,012,754	8,298,315	21,263,496
Nonproducing enterprises.....	62	69	386	6,222	15,093,487	517,188	627,111	.....

**Mining regions.**—Except for the leading states, statistics can not be shown by states without disclosure of individual operations, and groupings or combinations of states are necessary for adequate presentation of the statistics. The standard grouping by geographic divisions, as in Table 4, does not permit, especially in the copper and the lead and zinc industries, proper combinations of states related by varieties of ore produced and by industrial conditions in mining. Therefore, in subsequent tables statistics are presented by mining regions, as follows:

1. For producing enterprises in the copper-mining industry: The Western Region, comprising Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, and Washington; the Lake Region, comprising Michigan; the Central, Eastern, and Southern Regions, comprising, respectively, Missouri, Vermont, and Tennessee, which are combined to avoid disclosure of individual operations.

2. For producing enterprises in the lead and zinc industry: The Western Region, comprising Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, South Dakota, Utah, and Washington; the Central Region, comprising Arkansas, Illinois, Kansas, Missouri, Oklahoma, and Wisconsin; the Eastern Region, comprising New Jersey, New York, and Pennsylvania, with which is combined the Southern Region, including only Tennessee.

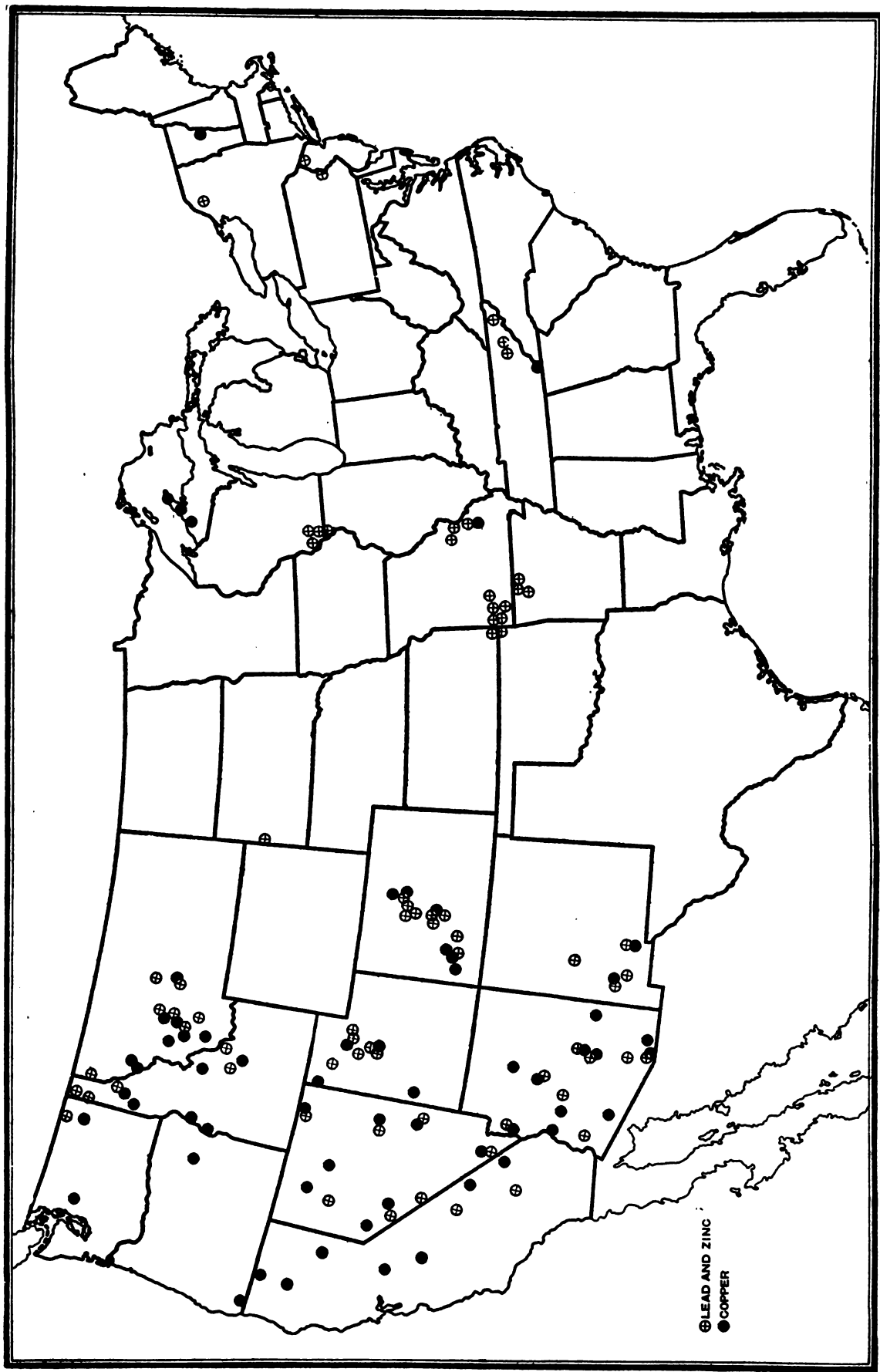
3. For producing enterprises in the gold and silver lode-mining industry: The Western Region, comprising Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Texas, Utah, Washington, and, to avoid disclosure of individual operations, the southern state, Georgia.

4. For producing enterprises in the gold placer-mining industry: The Western Region, comprising Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, and Washington.

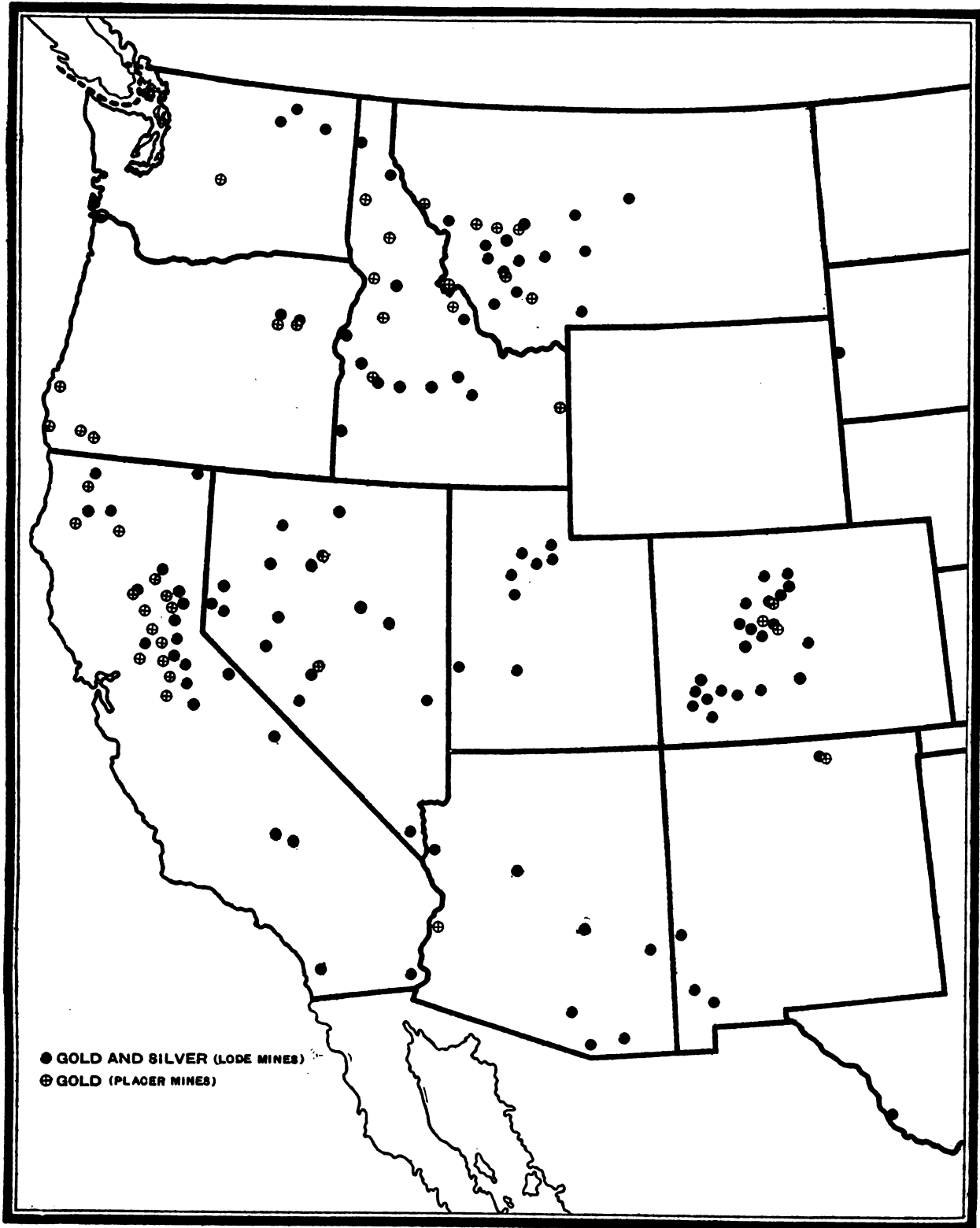
5. For nonproducing enterprises: The Western Region, comprising Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming; the Lake Region, comprising Michigan; the Central Region, comprising Kansas, Missouri, Oklahoma, and Wisconsin; the Eastern and Southern Regions, comprising, respectively, New York, Georgia, North Carolina, and Virginia, which are combined to avoid disclosure of individual operations.

The producing localities are shown on the maps on pages 360 and 361. These maps do not show all the gold, silver, copper, lead, and zinc resources of the United States, nor all the localities which have at one time or another been productive, but only indicate by a symbol for each industry the counties from which production was reported at the census of 1919.

LEAD, AND ZINC, AND COPPER PRODUCING LOCALITIES: 1919.



GOLD AND SILVER PRODUCING LOCALITIES: 1919.





Distribution of metal-mining industries by mining regions and states: 1919.—Table 5 presents for producing and nonproducing enterprises, for the United States, by regions and by industries for each region, the number of enterprises and mines, the average number of wage earners, the horsepower used, and the value of products, and shows the per cent distribution for each of these items. For all metal-mining indus-

tries combined, the Western Region was the principal region, having 83.7 per cent of the total number of enterprises, 67 per cent of the total average number of wage earners, and 73.6 per cent of the total value of products. The Central Region was second in rank and the Lake Region third. The importance of the Western Region in copper mining, and of the Central Region in lead mining, is also shown in this table.

TABLE 5.—STATISTICS FOR METAL-MINING INDUSTRIES, ALL ENTERPRISES: 1919.

INDUSTRY AND MINING REGION.	ENTERPRISES.		MINES.		WAGE EARNERS.		POWER USED (AGGREGATE HORSEPOWER).		VALUE OF PRODUCTS.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Average number.	Per cent distribution.	Amount.	Per cent distribution.	Amount.	Per cent distribution.
UNITED STATES, all industries.....	1,979	100.0	2,142	100.0	86,108	100.0	981,229	100.0	\$325,088,325	100.0
WESTERN REGION <sup>1</sup> .....	1,657	83.7	1,784	83.3	57,722	67.0	639,278	65.2	239,159,724	73.6
Producing mines—										
Copper.....	168	8.5	190	8.9	30,937	35.9	347,232	35.4	145,616,821	44.8
Lead and zinc.....	151	7.6	165	7.7	6,619	7.7	66,935	6.8	25,342,012	7.8
Gold and silver, lode <sup>1</sup> .....	740	37.4	799	37.3	15,436	17.9	149,680	15.3	58,832,330	18.1
Gold, placer.....	112	5.7	132	6.2	1,380	1.6	35,632	3.6	9,368,561	2.9
Nonproducing mines.....	486	24.6	498	23.2	3,350	3.9	39,799	4.1	.....	.....
CENTRAL REGION.....	281	14.2	307	14.3	12,586	14.6	137,445	14.0	44,184,673	13.6
Producing mines—										
Lead and zinc.....	274	13.8	300	14.0	12,532	14.6	136,049	13.9	44,184,673	13.6
Nonproducing mines.....	7	0.4	7	0.3	54	0.1	1,396	0.1	.....	.....
LAKE REGION.....	25	1.3	31	1.4	12,416	14.4	170,757	17.4	34,476,336	10.6
Producing mines—										
Copper.....	22	1.1	28	1.3	12,235	14.2	169,589	17.3	34,476,336	10.6
Nonproducing mines.....	3	0.2	3	0.1	181	0.2	1,168	0.1	.....	.....
EASTERN AND SOUTHERN REGIONS <sup>2</sup> .....	16	0.8	20	0.9	3,384	3.9	33,749	3.4	7,217,592	2.3
Producing mines—										
Lead and zinc.....	7	0.4	8	0.4	2,783	3.2	26,567	2.7	6,062,662	1.9
Copper.....	5	0.3	8	0.4	545	0.6	6,770	0.7	1,164,930	0.4
Nonproducing mines.....	4	0.2	4	0.2	106	0.1	422	( <sup>3</sup> )	.....	.....

<sup>1</sup> Includes 1 enterprise in the Southern Region.<sup>2</sup> Includes 1 enterprise in the Central Region.<sup>3</sup> Less than one-tenth of 1 per cent.

Table 6 presents, for each metal-mining industry as a whole and by regions, the average number of wage earners and the value of products and the per cent distribution of these items by industries and regions, and thus shows the relative importance of each industry and mining region. Table 7 presents by states for each metal-mining industry the average number of wage earners and value of products and shows by the per cent distribution of these items the relative importance of each state. Table 7 shows that Arizona was the principal copper-mining state, with 32.6 per cent of the total average number of wage earners and 46.5 per cent of the total value of products; that Oklahoma was the principal lead and zinc mining state, with 24 per cent of the total average of wage earners and 25.1 per cent of the total value of products; that Colorado was the principal gold and silver lode-mining state, with 22.6 per cent of the total average number of wage earners and 28.5 per cent of the total value of products; and that California was the principal placer-mining state, with 79.9 per cent of the total average number of wage earners and 84.7 per cent of the total value of products.

TABLE 6.—METAL-MINING INDUSTRIES, RANKED BY VALUE OF PRODUCTS, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND MINING REGION.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.
UNITED STATES, all industries.....	1,479	82,417	100.0	\$325,088,325	100.0
COPPER.....	195	43,717	53.0	181,258,067	55.8
Western Region.....	168	30,937	37.5	145,616,821	44.8
Lake Region.....	22	12,235	14.8	34,476,336	10.6
Central, Eastern, and Southern Regions.....	5	545	0.7	1,164,930	0.4
LEAD AND ZINC.....	432	21,584	26.6	75,579,347	23.3
Central Region.....	274	12,532	15.2	44,184,673	13.6
Western Region.....	151	6,619	8.0	25,342,012	7.8
Eastern and Southern Regions.....	7	2,783	3.3	6,062,662	1.9
GOLD AND SILVER LODE MINES..	740	15,436	18.7	58,832,330	18.1
Western Region <sup>1</sup> .....	740	15,436	18.7	58,832,330	18.1
GOLD, PLACER MINES.....	112	1,380	1.7	9,368,561	2.9
Western Region.....	112	1,380	1.7	9,368,561	2.9

<sup>1</sup> Includes 1 enterprise in the Southern Region.

TABLE 7.—METAL-MINING INDUSTRIES, RANKED BY VALUE OF PRODUCTS, BY STATES, PRODUCING ENTERPRISES: 1919.

MINING REGION AND STATE.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.
<b>COFFEE.</b>					
UNITED STATES.....	195	43,717	100.0	\$181,258,087	100.0
<b>WESTERN REGION:</b>					
Arizona.....	76	14,237	32.6	84,217,141	46.5
California.....	15	1,055	2.4	2,397,610	1.3
Idaho.....	8	87	0.2	340,309	0.2
Colorado.....	5	35	0.1	26,723	( <sup>1</sup> )
Montana, Oregon, and Washington.....	30	8,599	19.7	28,365,290	15.6
Utah, New Mexico, and Nevada.....	35	6,924	15.8	30,299,748	16.7
<b>LAKE REGION:</b>					
Michigan.....	22	12,285	28.0	34,476,336	19.0
<b>SOUTHERN, CENTRAL AND EASTERN REGIONS:</b>					
Tennessee, Missouri, and Vermont.....	5	545	1.2	1,164,980	0.6

<b>LEAD AND ZINC.</b>					
UNITED STATES.....	432	21,884	100.0	\$75,579,347	100.0
<b>WESTERN REGION:</b>					
Idaho.....	20	1,820	8.3	9,529,723	12.6
Colorado.....	27	936	4.3	2,622,150	3.5
California.....	17	115	0.5	261,454	0.3
Arizona.....	15	101	0.5	127,843	0.2
Montana, Utah, Nevada, New Mexico, Washington, and South Dakota.....	72	3,647	16.7	12,800,842	16.9
<b>CENTRAL REGION:</b>					
Oklahoma.....	111	5,253	24.0	18,979,726	25.1
Missouri.....	93	4,793	21.9	15,879,177	21.0
Kansas.....	30	1,141	5.2	4,872,968	6.4
Wisconsin.....	23	1,078	4.9	3,816,911	5.1
Illinois.....	6	239	1.1	621,296	0.8
Arkansas.....	11	28	0.1	14,595	( <sup>1</sup> )
<b>EASTERN AND SOUTHERN REGIONS:</b>					
New Jersey, Tennessee, New York, and Pennsylvania.....	7	2,733	12.5	6,062,662	8.0

<b>GOLD AND SILVER, LOBE MINES.</b>					
UNITED STATES.....	740	15,436	100.0	\$58,832,330	100.0
<b>WESTERN REGION:<sup>2</sup></b>					
Colorado.....	198	3,495	22.6	16,785,716	28.5
Nevada.....	148	2,084	13.5	9,687,431	16.5
California.....	99	2,881	18.7	8,773,757	14.9
Utah.....	49	2,167	14.0	8,449,506	14.4
Arizona.....	51	642	4.2	3,523,447	6.0
Montana.....	116	1,107	7.2	2,817,067	4.8
Idaho.....	32	349	2.3	1,396,915	2.4
New Mexico.....	23	393	2.5	922,406	1.6
Washington.....	10	149	1.0	451,625	0.8
South Dakota, Texas, Oregon, and Georgia.....	14	2,169	14.1	6,024,460	10.2

<b>GOLD, PLACER MINES.</b>					
UNITED STATES.....	112	1,390	100.0	\$9,368,561	100.0
<b>WESTERN REGION:</b>					
California.....	60	1,102	79.9	7,937,654	84.7
Colorado.....	5	110	8.0	570,819	6.1
Nevada.....	8	19	1.4	63,649	0.7
All other <sup>3</sup> .....	39	149	10.8	796,439	8.5

<sup>1</sup> Less than one-tenth of 1 per cent.  
<sup>2</sup> Includes 1 enterprise in Georgia to avoid disclosure of individual operations.  
<sup>3</sup> Includes enterprises for states listed in order of value of products as follows: Oregon, 16; Montana, 9; Idaho, 11; New Mexico, 1; Washington, 1; and Arizona, 1.

**Rank of states: 1919.**—Table 8 ranks all productive states, which can be shown without disclosure of individual operations, according to the value of products of all gold, silver, copper, lead, and zinc mines for

1919 and gives the per cent distribution of the average number of wage earners and the value of products. Twenty-five states were represented in the industries, but practically 50 per cent of the value of products was reported by three—Arizona, Montana, and Michigan.

TABLE 8.—RANK OF STATES FOR LOBE AND PLACER MINES COMBINED, PRODUCING ENTERPRISES: 1919.

STATE.	Num-ber of enter-prises.	WAGE EARNERS.		VALUE OF PROD-UCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.
United States.....	1,479	82,417	100.0	\$325,088,325	100.0
Arizona.....	142	14,985	18.2	187,868,431	27.0
Montana.....	162	11,925	14.5	139,623,472	12.2
Michigan.....	22	12,235	14.8	34,476,336	10.6
Utah.....	86	5,874	7.1	27,824,207	8.6
Colorado.....	235	4,576	5.6	20,006,408	6.2
California.....	191	5,153	6.2	19,370,475	6.0
Oklahoma.....	111	5,253	6.4	18,979,726	5.8
Nevada.....	186	3,987	4.8	17,144,472	5.3
Missouri <sup>2</sup> .....	93	4,793	5.8	15,879,177	4.9
Idaho.....	71	2,275	2.8	11,266,947	3.5
New Mexico.....	44	3,059	3.7	8,135,067	2.5
Kansas.....	30	1,141	1.4	4,872,968	1.5
Wisconsin.....	23	1,078	1.3	3,816,911	1.2
Tennessee.....	5	1,282	1.6	3,121,803	1.0
Oregon.....	27	423	0.5	1,221,552	0.4
Washington.....	20	221	0.3	1,670,869	0.2
Illinois.....	6	239	0.3	621,296	0.2
All other states <sup>3</sup> .....	25	3,918	4.8	9,686,831	3.0

<sup>1</sup> Exclusive of value of products for placer mines to avoid disclosure of individual operations. This value is, however, included in the total for the United States.

<sup>2</sup> Exclusive of data for 1 copper enterprise to avoid disclosure of individual operations.

<sup>3</sup> Includes enterprises for states listed in order of value of products as follows: South Dakota, 5; New Jersey, 2; Texas, 1; New York, 1; Vermont, 2; Arkansas, 11; Georgia, 1; and Pennsylvania, 1. Includes also 1 copper enterprise in Missouri.

**PROGRESS OF THE INDUSTRY.**

Comparative summary for producing enterprises: 1919, 1909, and 1902.—Table 9 presents for the producing metal-mining industries combined and for each industry separately, a summary of the principal statistics as reported at the Fourteenth Census and the two preceding censuses of mines and quarries. This table shows for the combined metal-mining industries a large decrease in the number of enterprises occurring chiefly in the last decade; an increase in the average number of wage earners in 1909 as compared with 1902, and considerable decrease in 1919 as compared with 1909; a large increase in the horsepower of mechanical equipment used which was most marked in the period 1902-1909; considerable increases in salaries and wages, in the cost of supplies and materials and of fuel and purchased power, and in the value of products which were larger for the first period than for the second period. The increases from 1909 to 1919 in the items salaries, wages, fuel and purchased power, and value of products are largely due to general price increases and do not measure growth of the industries. The very large increase in taxes in 1919 as compared with 1909 is due to the addition, since 1909, of Federal income taxes and in some states special taxes on mining.

A decline is shown in 1919 for the combined metal-mining industries which in fact suffered severe depression partly on account of the depreciated purchasing power of gold and partly because of the cessation of the war demand for the base metals and governmental regulation of metal prices.

TABLE 9.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919, 1909, AND 1902.

	1919	1909	1902	PER CENT OF INCREASE. <sup>1</sup>	
				1909-1919	1902-1909
<b>ALL METAL-MINING INDUSTRIES.</b>					
Number of enterprises.....	1,479	3,459	3,693	-57.2	-6.3
Number of mines.....	1,630	5,235	3,695	-68.9	41.7
Persons engaged.....	90,211	111,247	(*)	-18.9	.....
Proprietors and firm members.....	1,849	4,988	(*)	-73.0	.....
Performing manual labor.....	810	2,837	(*)	-71.4	.....
Salaried employees.....	6,445	5,297	5,593	21.7	-5.4
Wage earners (av. number).....	82,417	100,962	70,080	-18.4	44.2
Power used (aggregate h. p.).....	938,444	715,267	436,213	31.2	64.0
Capital.....	\$1,355,826,963	\$965,080,369	(*)	58.7	.....
<b>Principal expenses:</b>					
Salaries.....	15,317,235	9,034,747	\$7,671,556	69.5	17.8
Wages.....	122,830,242	93,393,581	61,553,189	81.5	51.7
Contract work.....	2,555,074	4,545,357	923,465	-41.6	392.2
Cost of purchased ore.....	6,602,398	13,995,638	(*)	-65.2	.....
Supplies and materials.....	64,872,542	44,846,457	\$30,294,600	44.6	48.0
Fuel and purchased power.....	25,344,763	21,505,736	(*)	17.9	.....
Royalties and rents.....	6,898,324	5,397,207	3,073,982	27.8	75.3
Taxes.....	18,237,579	3,306,291	(*)	451.8	.....
Value of products.....	325,088,325	260,103,261	\$148,260,265	25.0	75.4
<b>COPPER.</b>					
Number of enterprises.....	195	188	144	3.7	30.6
Number of mines.....	226	368	144	-38.6	155.6
Persons engaged.....	46,999	53,758	(*)	-12.6	.....
Proprietors and firm members.....	103	79	(*)	.....	.....
Performing manual labor.....	62	42	(*)	.....	.....
Salaried employees.....	3,179	2,096	1,208	56.1	68.5
Wage earners (av. number).....	43,717	51,643	26,007	-15.3	98.6
Power used (aggregate h. p.).....	523,591	376,464	198,507	39.1	89.6
Capital.....	\$653,639,017	\$301,896,296	(*)	182.8	.....
<b>Principal expenses:</b>					
Salaries.....	8,039,741	3,714,028	\$1,768,456	116.5	110.0
Wages.....	66,990,194	49,382,979	21,151,406	84.4	133.5
Contract work.....	421,753	644,582	193,768	-34.6	241.5
Cost of purchased ore.....	1,528,066	10,596,964	(*)	-85.6	.....
Supplies and materials.....	34,275,369	23,718,373	\$11,063,175	44.5	114.0
Fuel and purchased power.....	14,866,015	13,324,157	(*)	11.6	.....
Royalties and rents.....	636,819	1,789,656	130,215	-70.0	1274.4
Taxes.....	12,229,046	1,934,158	(*)	532.3	.....
Value of products.....	181,258,087	134,616,987	\$51,178,036	34.6	163.0
<b>LEAD AND ZINC.</b>					
Number of enterprises.....	432	977	557	-55.8	75.4
Number of mines.....	473	1,142	559	-58.6	104.3
Persons engaged.....	24,030	19,601	(*)	22.6	.....
Proprietors and firm members.....	412	1,947	(*)	-78.8	.....
Performing manual labor.....	186	1,171	(*)	-84.1	.....
Salaried employees.....	1,734	847	910	104.7	-6.9
Wage earners (av. number).....	21,884	16,307	7,881	30.2	113.3
Power used (aggregate h. p.).....	229,541	110,559	41,901	107.6	163.9
Capital.....	\$197,223,814	\$62,627,935	(*)	214.9	.....
<b>Principal expenses:</b>					
Salaries.....	3,834,940	1,092,566	\$826,327	251.0	32.2
Wages.....	30,708,319	10,477,657	4,329,271	193.1	142.0
Contract work.....	983,471	197,259	108,607	337.7	81.6
Cost of purchased ore.....	408,051	1,947,047	(*)	-79.1	.....
Supplies and materials.....	15,311,548	4,836,023	\$2,511,657	216.6	92.5
Fuel and purchased power.....	5,375,155	2,400,724	(*)	123.9	.....
Royalties and rents.....	5,258,387	2,301,850	1,525,368	128.4	59.9
Taxes.....	3,328,910	167,188	(*)	1889.9	.....
Value of products.....	75,579,347	31,363,094	\$14,600,177	141.0	114.8

TABLE 9.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES, 1919, 1909, AND 1902—Continued.

	1919	1909	1902	PER CENT OF INCREASE. <sup>1</sup>	
				1909-1919	1902-1909
<b>GOLD AND SILVER, LODE MINES.</b>					
Number of enterprises.....	740	1,616	2,017	-54.2	-19.9
Number of mines.....	799	2,845	2,017	-71.9	41.1
Persons engaged.....	17,531	33,567	(*)	-47.8	.....
Proprietors and firm members.....	712	2,011	(*)	-64.6	.....
Performing manual labor.....	485	951	(*)	-49.0	.....
Salaried employees.....	1,383	2,128	3,205	-35.0	-33.6
Wage earners (av. number).....	15,436	29,428	33,821	-47.5	-13.0
Power used (aggregate h. p.).....	149,680	200,966	184,512	-25.5	8.9
Capital.....	\$280,388,711	\$443,715,258	(*)	-36.8	.....
<b>Principal expenses:</b>					
Salaries.....	3,005,761	3,797,380	\$4,752,355	-20.8	-20.1
Wages.....	23,817,657	30,868,371	34,258,734	-22.8	-9.9
Contract work.....	1,237,043	3,603,984	606,137	-65.7	494.6
Cost of purchased ore.....	4,668,291	6,451,627	(*)	-27.6	.....
Supplies and materials.....	13,040,867	14,100,617	15,908,782	-7.5	-11.4
Fuel and purchased power.....	3,959,260	5,105,253	(*)	-22.4	.....
Royalties and rents.....	1,015,719	1,163,985	1,277,632	-12.7	-8.9
Taxes.....	2,325,491	1,084,576	(*)	114.4	.....
Value of products.....	58,832,330	83,885,928	77,154,326	-29.9	8.7

	1919	1909	1902	PER CENT OF INCREASE. <sup>1</sup>	
				1909-1919	1902-1909
<b>GOLD, PLACER MINES.</b>					
Number of enterprises.....	112	678	975	-82.5	-30.5
Number of mines.....	132	880	975	-86.0	-9.7
Persons engaged.....	1,651	4,321	(*)	-61.8	.....
Proprietors and firm members.....	122	961	(*)	-87.2	.....
Performing manual labor.....	77	672	(*)	-88.6	.....
Salaried employees.....	149	286	275	-47.9	4.0
Wage earners (av. number).....	1,380	3,084	2,321	-55.3	32.9
Power used (aggregate h. p.).....	35,662	27,278	11,293	30.6	141.5
Capital.....	\$24,574,441	\$56,840,870	(*)	-56.3	.....
<b>Principal expenses:</b>					
Salaries.....	436,793	430,773	\$324,418	1.4	32.8
Wages.....	1,914,072	2,669,574	1,818,758	-25.3	46.8
Contract work.....	132,807	99,582	19,953	32.4	390.1
Cost of purchased ore.....	(*)	(*)	(*)	.....	.....
Supplies and materials.....	2,244,728	2,194,444	790,966	2.3	177.4
Fuel and purchased power.....	1,144,333	675,602	(*)	60.4	.....
Royalties and rents.....	85,899	141,716	145,767	-30.4	-2.8
Taxes.....	356,132	119,369	(*)	196.3	.....
Value of products.....	9,368,561	10,237,252	\$5,327,726	-8.5	92.2

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

<sup>2</sup> See "Thirteenth Census of the United States—Mines and Quarries, Vol. XI," page 344.

<sup>3</sup> Not reported.  
<sup>4</sup> Comparable figures not available.

<sup>5</sup> Includes cost of fuel.  
<sup>6</sup> Value of products as reported is less cost of ores purchased by mills, and includes an estimated production of \$1,138,181 for a number of small placer mines for which no reports were received directly from operators and for which other statistics are lacking.

<sup>7</sup> Value of products as reported is less cost of ores purchased by mills.  
<sup>8</sup> Includes an estimated production of \$1,138,181 for a number of small mines for which no reports were received directly from operators and for which other statistics are lacking.

In the copper-mining industry the statistics for 1909 show large increases as compared with statistics for 1902, and the statistics for 1919 show a small decrease, prices considered, as compared with 1909. In the lead and zinc mining industry, notwithstanding decrease in the number of enterprises operated in 1919 as compared with earlier years, large increases for other items in the table are indicated for both census periods. The increase in lead and zinc mining shown for 1919 as compared with 1909 is, however, due less to actual growth of the industry than to the fact that enterprises reported as lead and zinc mines for 1919 were classified as silver mines at the

census of 1909. In the gold and silver lode-mining industry notable decreases, particularly in the last decade, are shown by the statistics for the three censuses.

**Comparison of quantity of products: 1919 and 1909.**—As explained in the introduction, the available data on quantity of products are of limited worth because of the different bases of measurement of the many products and because of the complexity and variability in metal content of the different products. For that reason the data in Table 9 are supplemented by only a very brief summary of the quantity of ores and metals produced in 1919 and 1909 in Table 10, which shows the tonnage of all ores produced and the gross metal content of ores and placer mine products. Corresponding statistics for 1902 are not available.

TABLE 10.—METAL MINES OUTPUT: 1919 AND 1909.<sup>1</sup>

[Continental United States, exclusive of Alaska.]

YEAR.	Total ores (tons, 2000 pounds).	METAL CONTENT OF ORES AND PLACER MINES' PRODUCTS.				
		Gold (fine ounces).	Silver (fine ounces).	Copper (tons, 2,000 pounds).	Lead (tons, 2,000 pounds).	Zinc (tons, 2,000 pounds).
1919.....	61,839,245	2,297,298	51,269,756	582,555	443,007	549,242
1909.....	52,491,171	4,796,313	54,068,792	561,199	397,937	306,161

<sup>1</sup> U. S. Geological Survey, Mineral Resources.

Table 10 shows a large increase in the total tons mined, and increases in the copper, lead, and zinc metal content of the total ores mined, but large decreases in the gold and silver content of the output in 1919 as compared with 1909.

**Comparison of value of products, by regions: 1919, 1909, and 1902.**—Table 11 presents for the United States, for all industries combined, and by regions and by industries, the value of products of metal-mining enterprises for 1919, 1909, and 1902. The statistics for 1909 as compared with those for 1902 show large increase in the value of products of copper, and lead and zinc mining, and of placer mining. The principal increase in 1919 as compared with 1909 was also in the copper, and lead and zinc mining industries, and particularly in the Western Region for the copper and the Central Region for the lead and zinc industry. The large increase in the value of products of the lead and zinc industry as a whole, and in the Western Region locally, as shown in the table, is not a true measure of the change in that industry and region, but is principally due to the fact that many lead and zinc mines in the Western Region were classified at the census of 1909 as silver-producing mines. Correspondingly, therefore, the decrease in the gold and silver mining industry as shown by the value of products reported at the censuses of 1909 and 1919 is in excess of the actual decrease.

TABLE 11.—COMPARISON OF VALUE OF PRODUCTS, PRODUCING ENTERPRISES: 1919, 1909, AND 1902.

MINING REGION AND INDUSTRY.	1919	1909	1902	INCREASE. <sup>1</sup>		PER CENT OF INCREASE. <sup>1</sup>	
				1909-1919	1902-1909	1909-1919	1902-1909
				UNITED STATES, all industries.....	\$325,038,325	\$260,103,261	* \$148,260,265
Western Region.....	239,154,524	196,374,384	( <sup>2</sup> )	42,780,160		21.8	
Lake Region.....	34,476,396	30,165,443	18,247,207	4,310,953	11,918,236	14.3	66.3
Central Region.....	* 44,184,673	26,644,252	( <sup>2</sup> )	17,540,421		65.8	
Eastern and Southern Regions.....	* 7,222,792	6,919,202	( <sup>2</sup> )	303,590		4.4	
COPPER.....	181,268,067	134,616,987	51,178,036	46,641,100	83,438,961	34.6	163.0
Western Region.....	145,616,821	101,983,090	( <sup>2</sup> )	43,633,731		42.8	
Lake Region.....	34,476,396	30,165,443	18,247,207	4,310,953	11,918,236	14.3	65.3
Central, Eastern, and Southern Regions.....	1,164,930	2,468,454	( <sup>2</sup> )	-1,303,524		-52.8	
LEAD AND ZINC.....	75,879,347	31,263,094	14,600,177	44,216,253	16,762,917	141.0	114.8
Western Region.....	25,342,012	405,102	( <sup>2</sup> )	24,636,910			
Central Region.....	44,184,673	26,644,252	13,870,865	17,540,421	12,773,387	65.8	92.1
Eastern and Southern Regions.....	6,062,662	4,313,740	( <sup>2</sup> )	1,738,923		40.3	
GOLD AND SILVER, LODGE MINES <sup>3</sup> .....	58,832,330	83,885,928	77,154,326	-25,053,598	6,731,602	-29.9	8.7
GOLD, PLACER MINES.....	9,368,561	* 10,237,252	5,327,726	-868,691	4,909,526	-8.5	92.2

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where comparable figures can not be given.

<sup>2</sup> Value of products as reported is less cost of ores purchased by mills and includes an estimated production of \$1,138,181 for a number of small placer mines for which no reports were received directly from operators.

<sup>3</sup> Comparable figures not available.

<sup>4</sup> Exclusive of 1 enterprise included in Eastern and Southern regions.

<sup>5</sup> Includes 1 enterprise in Central Region.

<sup>6</sup> Includes Western and Southern Regions.

## MINES AND QUARRIES.

Power used per enterprise and per wage earner: 1919 and 1909.—Table 12 presents for 1919 and 1909, by industries and by mining regions, statistics in regard to the horsepower used per enterprise and per wage earner. The table shows that the increase in horsepower of mechanical equipment used, considerable in the absolute aggregate, is greatly augmented in the average per enterprise by the decrease in the

number of enterprises operating. The horsepower used per enterprise increased more than twofold for all metal-mining industries throughout the United States, and the horsepower per wage earner also increased notably. In the metal-mining industries the horsepower used per wage earner employed has increased very considerably since the last census and is relatively large as compared with other mining industries.

TABLE 12.—POWER USED PER ENTERPRISE AND PER WAGE EARNER, PRODUCING ENTERPRISES: 1919 AND 1909.

MINING REGION AND INDUSTRY.	NUMBER OF ENTERPRISES.		WAGE EARNERS (AVERAGE NUMBER).		POWER USED (AGGREGATE HORSEPOWER).		HORSEPOWER PER ENTERPRISE.			HORSEPOWER PER WAGE EARNER.		
	1919	1909	1919	1909	1919	1909	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>
UNITED STATES, all industries.....	1,479	3,459	82,417	100,962	938,444	715,267	635	207	206.8	11.4	7.1	60.6
Copper.....	195	188	43,717	51,643	523,591	376,464	2,685	2,002	34.1	12.0	7.3	64.4
Lead and zinc.....	432	977	21,884	16,807	229,541	110,559	531	113	369.9	10.5	6.6	59.1
Gold and silver, lode mines.....	740	1,616	15,436	29,428	149,680	200,966	202	124	62.9	9.7	6.8	42.6
Gold, placer mines.....	112	678	1,380	3,064	35,632	27,278	318	40	965.0	25.8	8.8	193.2
<b>COPPER:</b>												
Western Region.....	168	162	30,937	31,343	347,232	222,600	2,067	1,374	50.4	11.2	7.1	57.7
Lake Region.....	22	21	12,235	19,125	169,589	149,749	7,709	7,181	8.1	12.9	7.8	78.2
Central, Eastern, and Southern Regions.....	5	5	545	1,175	6,770	4,115	1,354	828	64.5	12.4	3.5	264.3
<b>LEAD AND ZINC:</b>												
Western Region.....	151	17	6,619	178	66,935	847	443	50	786.0	10.1	4.8	110.4
Central Region.....	274	955	12,532	15,028	136,049	106,845	497	112	343.8	10.9	7.1	53.5
Eastern and Southern Regions.....	7	5	2,733	1,601	26,537	2,867	3,794	673	562.1	9.7	1.8	439.9

<sup>1</sup> A minus sign (—) denotes decrease.

## CHARACTER OF ORGANIZATION.

The character of organizations operating producing metal-mining enterprises in 1919 is given in Table 13. The table shows for the United States as a whole, for lode mines and placer mines separately, and for selected states by mining regions the number of enterprises operated by corporations and by other forms of organization, and gives the average number of wage earners employed by each class and the value of their products in 1919. For the United States as a whole for all metal-mining industries combined, cor-

porations conducted a majority of the enterprises, including the larger and more important ones, employed 96.7 per cent of the total average number of wage earners, and reported 97.2 per cent of the total value of products. In the placer-mining industry throughout the United States and in the lode-mining industry in California, Montana, New Mexico, and Missouri corporations were outnumbered by other forms of organization but were nevertheless preponderant as to the number of wage earners employed and value of products.

TABLE 13.—CHARACTER OF ORGANIZATION, PRODUCING ENTERPRISES: 1919.

MINING REGION, STATE, AND CHARACTER OF ORGANIZATION.	Number of enterprises	Wage earners (av. number).	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.			MINING REGION, STATE, AND CHARACTER OF ORGANIZATION.	Number of enterprises	Wage earners (av. number).	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Amount.	Per enterprise.	Enterprises.	Wage earners (av. number).	Value of products.				Amount.	Per enterprise.	Enterprises.	Wage earners (av. number).	Value of products.
<b>UNITED STATES</b> .....	1,479	82,417	\$325,088,235	\$219,789	100.0	100.0	100.0	<b>WESTERN REGION—Con.</b>							
<b>Corporation</b> .....	869	79,636	315,966,966	363,598	58.8	96.7	97.2	<b>LODE MINES—Con.</b>							
<b>Individual</b> .....	235	1,001	2,980,948	12,600	15.9	1.2	0.9	Utah.....	86	5,874	\$27,824,207	\$828,537	100.0	100.0	100.0
<b>Firm</b> .....	359	1,459	6,889,688	15,013	24.3	1.8	1.7	<b>Corporation</b> .....	77	5,849	27,719,741	859,997	89.5	99.6	99.6
<b>Other</b> .....	16	272	720,823	45,051	1.1	0.3	0.2	<b>Individual</b> .....	4	10	55,794	13,948	4.7	0.2	0.2
<b>LODE MINES</b> .....	1,367	81,037	315,699,764	230,922	100.0	100.0	100.0	<b>Firm</b> .....	5	15	48,672	9,784	5.8	0.3	0.3
<b>Corporation</b> .....	824	78,426	307,001,718	372,575	60.3	96.8	97.3	Washington.....	19	221	670,869	35,309	100.0	100.0	100.0
<b>Individual</b> .....	202	928	2,622,933	12,985	14.8	1.1	0.8	<b>Corporation</b> .....	16	216	647,723	40,433	84.2	97.7	95.6
<b>Firm</b> <sup>1</sup> .....	341	1,688	6,045,113	17,728	24.9	2.1	1.9	<b>Firm</b> <sup>2</sup> .....	3	5	28,141	7,714	15.8	2.3	3.4
<b>PLACER MINES</b> .....	112	1,380	9,368,561	88,648	100.0	100.0	100.0	<b>PLACER MINES—</b>							
<b>Corporation</b> .....	45	1,259	8,965,148	199,226	40.2	91.2	95.7	California.....	60	1,102	7,987,654	132,294	100.0	100.0	100.0
<b>Individual</b> .....	33	78	888,015	10,243	29.5	5.7	3.6	<b>Corporation</b> .....	28	1,005	7,607,977	271,713	46.7	91.2	95.8
<b>Firm</b> <sup>3</sup> .....	34	43	65,398	1,923	30.4	3.1	0.7	<b>Individual</b> .....	18	65	306,590	17,088	80.0	5.9	3.9
<b>WESTERN REGION:</b>								<b>Firm</b> <sup>4</sup> .....	14	32	28,087	1,649	23.3	2.9	0.3
<b>LODE MINES—</b>								<b>LAKE REGION:</b>							
<b>Arizona</b> .....	141	14,980	87,868,481	623,180	100.0	100.0	100.0	<b>LODE MINES—</b>							
<b>Corporation</b> .....	87	14,738	87,378,796	1,004,354	61.7	98.4	99.4	Michigan.....	22	12,235	34,476,336	1,567,106	100.0	100.0	100.0
<b>Individual</b> .....	25	181	305,142	12,206	17.7	1.2	0.3	<b>Corporation</b> .....	22	12,235	34,476,336	1,567,106	100.0	100.0	100.0
<b>Firm</b> <sup>5</sup> .....	29	66	184,493	6,362	20.6	0.4	0.2	<b>CENTRAL REGION:</b>							
<b>California</b> .....	131	4,051	11,432,821	87,273	100.0	100.0	100.0	<b>LODE MINES—</b>							
<b>Corporation</b> .....	65	3,810	10,534,489	162,069	49.6	94.1	92.1	Kansas.....	80	1,141	4,872,968	162,432	100.0	100.0	100.0
<b>Individual</b> .....	28	85	126,123	4,504	21.4	2.1	1.1	<b>Corporation</b> .....	25	1,111	4,841,010	193,640	88.3	97.4	99.3
<b>Firm</b> <sup>6</sup> .....	38	156	772,209	20,321	29.0	3.9	6.8	<b>Firm</b> <sup>7</sup> .....	5	30	31,958	6,392	16.7	2.6	0.7
<b>Colorado</b> .....	230	4,466	19,434,589	84,498	100.0	100.0	100.0	Missouri.....	93	4,793	15,879,177	170,744	100.0	100.0	100.0
<b>Corporation</b> .....	136	4,164	18,334,442	134,812	59.1	93.0	94.3	<b>Corporation</b> .....	86	4,505	15,158,827	421,079	88.7	94.0	95.5
<b>Individual</b> .....	28	119	287,151	10,255	12.1	2.7	1.5	<b>Individual</b> .....	9	59	102,967	11,441	9.7	1.2	0.6
<b>Firm</b> <sup>8</sup> .....	66	193	812,996	12,318	28.7	4.3	4.2	<b>Firm</b> <sup>8</sup> .....	48	229	617,388	12,862	51.6	4.8	3.9
<b>Idaho</b> .....	60	2,256	11,266,947	187,782	100.0	100.0	100.0	Oklahoma.....	111	5,253	18,979,726	170,989	100.0	100.0	100.0
<b>Corporation</b> .....	40	2,004	10,102,002	262,550	66.7	88.8	89.7	<b>Corporation</b> .....	88	4,587	16,257,559	184,745	79.3	87.3	85.7
<b>Individual</b> .....	4	9	10,800	2,650	6.7	0.4	0.1	<b>Firm</b> <sup>9</sup> .....	18	532	2,360,397	131,133	16.2	10.1	12.4
<b>Firm</b> <sup>9</sup> .....	16	243	1,154,345	72,147	26.7	10.8	10.2	<b>Other</b> .....	5	134	361,770	72,354	4.5	2.6	1.9
<b>Montana</b> .....	153	11,862	39,623,472	258,977	100.0	100.0	100.0	Wisconsin.....	23	1,078	3,816,911	165,953	100.0	100.0	100.0
<b>Corporation</b> .....	83	11,730	39,194,355	739,516	34.6	98.9	98.9	<b>Corporation</b> .....	19	1,038	3,676,721	193,512	82.6	96.3	96.3
<b>Individual</b> .....	45	77	171,121	3,893	29.4	0.6	0.4	<b>Firm</b> <sup>10</sup> .....	4	40	140,190	35,048	17.4	3.7	3.7
<b>Firm</b> <sup>10</sup> .....	55	55	257,996	4,691	35.9	0.5	0.7	<b>EASTERN AND SOUTH-</b>							
<b>Nevada</b> .....	178	3,968	17,080,823	95,960	100.0	100.0	100.0	<b>ERN REGIONS:<sup>1</sup></b>							
<b>Corporation</b> .....	103	3,772	16,459,439	169,800	57.9	95.1	96.4	<b>LODE MINES—</b>							
<b>Individual</b> .....	37	71	169,727	4,587	20.8	1.8	1.0	Vermont, New Jersey,							
<b>Firm</b> <sup>11</sup> .....	38	125	451,657	11,886	21.3	3.2	2.6	New York,							
<b>New Mexico</b> .....	43	3,057	8,135,067	189,188	100.0	100.0	100.0	Pennsylvania,							
<b>Corporation</b> .....	20	2,925	7,969,802	398,490	46.5	95.7	98.0	Tennessee, and							
<b>Individual</b> .....	13	58	94,755	7,289	30.2	1.9	1.2	Georgia.....							
<b>Firm</b> <sup>12</sup> .....	10	74	70,510	7,051	23.3	2.4	0.9	<b>Corporation</b> <sup>12</sup> .....	13	3,313	7,222,792	555,599	100.0	100.0	100.0

<sup>1</sup> Includes 14 other forms of organization.  
<sup>2</sup> Includes 2 other forms of organization.  
<sup>3</sup> Includes 1 other form of organization.  
<sup>4</sup> Includes 4 other forms of organization.

<sup>5</sup> Includes 2 individuals.  
<sup>6</sup> Exclusive of 1 copper enterprise included in Eastern and Southern Regions.  
<sup>7</sup> Includes 1 Missouri copper enterprise.  
<sup>8</sup> Includes 1 small operation conducted by an individual.

SCALE OF OPERATION.

Size of enterprises, according to value of products.— Table 14 presents a classification of the producing metal-mining enterprises in 1919 according to the value of their products and gives the per cent distribution of enterprises and value of products for each group. The statistics are given for the United States for the metal-mining industries as a whole, for the combined lode-mining industries, and the placer-mining industry. The lode-mining and placer-mining industries are also shown separately by states for min-

ing regions. The table shows that in the lode-mining industries 56 enterprises, constituting 4.1 per cent of the total number of such enterprises, each having products valued at more than \$1,000,000, reported 70.4 per cent of the total value of products. In the placer-mining industry three enterprises out of a total of 112, each having products worth more than \$500,000, reported 61.1 per cent of the total value of products. In both lode and placer mining the small enterprises greatly outnumbered the large enterprises, but contributed a very small part of the total value of products.

TABLE 14.—SIZE OF PRODUCING ENTERPRISES, BY VALUE OF PRODUCTS: 1919.

MINING REGION, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.		MINING REGION, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.	
	Number.	Per cent distribution.	Amount.	Per cent distribution.		Number.	Per cent distribution.	Amount.	Per cent distribution.
<b>UNITED STATES.....</b>	<b>1,479</b>	<b>100.0</b>	<b>\$325,038,325</b>	<b>100.0</b>	<b>WESTERN REGION—Continued.</b>				
Less than \$5,000.....	650	43.9	1,179,893	0.4	<b>LODE MINES—Continued.</b>				
\$5,000 to \$20,000.....	274	18.5	2,799,607	0.9	Utah—Continued.	11	12.8	\$119,110	0.4
\$20,000 to \$100,000.....	243	16.4	12,354,338	3.8	\$5,000 to \$20,000.....	22	25.6	1,052,242	3.8
\$100,000 to \$500,000.....	203	14.1	49,588,128	15.3	\$20,000 to \$100,000.....	16	18.6	3,468,012	12.5
\$500,000 to \$1,000,000.....	41	2.8	31,839,102	9.7	\$100,000 to \$500,000.....	6	7.0	4,459,018	16.9
\$1,000,000 to \$5,000,000.....	47	3.2	91,881,902	28.3	\$500,000 to \$1,000,000.....	3	3.5	18,679,290	67.1
\$5,000,000 and over.....	16	1.1	135,415,355	41.7	\$1,000,000 and over <sup>1</sup> .....	19	100.0	670,869	100.0
<b>LODE MINES.....</b>	<b>1,367</b>	<b>100.0</b>	<b>315,669,764</b>	<b>100.0</b>	Washington.....	8	42.1	10,949	1.6
Less than \$5,000.....	576	42.1	1,090,034	0.3	Less than \$5,000.....	5	26.3	77,197	11.5
\$5,000 to \$20,000.....	262	19.2	2,687,429	0.9	\$5,000 to \$20,000.....	6	31.6	582,728	85.9
\$20,000 to \$100,000.....	231	16.9	11,555,733	3.7	\$20,000 and over <sup>1</sup> .....				
\$100,000 to \$500,000.....	197	14.4	48,976,421	14.9	Oregon, South Dakota, and Texas.....	17	100.0	6,448,737	100.0
\$500,000 to \$1,000,000.....	45	3.3	31,224,297	9.9	Less than \$100,000 <sup>2</sup> .....	11	64.7	97,620	1.5
\$1,000,000 to \$5,000,000.....	41	3.0	89,750,445	27.5	\$100,000 to \$500,000.....	3	17.6	900,249	14.0
\$5,000,000 and over.....	15	1.1	135,415,355	42.9	\$500,000 and over <sup>1</sup> .....	3	17.6	6,450,868	84.5
<b>PLACER MINES.....</b>	<b>112</b>	<b>100.0</b>	<b>9,368,561</b>	<b>100.0</b>	<b>PLACER MINES—</b>				
Less than \$5,000.....	74	66.1	119,809	1.3	California.....	60	100.0	7,937,654	100.0
\$5,000 to \$20,000.....	12	10.7	112,178	1.2	Less than \$5,000.....	37	61.7	65,991	0.8
\$20,000 to \$100,000.....	12	10.7	798,605	8.5	\$5,000 to \$20,000.....	6	10.0	47,885	0.6
\$100,000 to \$500,000.....	11	9.8	2,611,707	27.9	\$20,000 to \$100,000.....	7	11.7	444,994	5.6
\$500,000 and over <sup>1</sup> .....	3	2.7	5,726,262	61.1	\$100,000 to \$500,000.....	7	11.7	1,652,822	20.8
					\$500,000 and over <sup>1</sup> .....	3	5.0	5,726,262	72.1
<b>WESTERN REGION:</b>					Other states.....	52	100.0	1,480,907	100.0
<b>LODE MINES.....</b>	<b>1,058</b>	<b>100.0</b>	<b>229,785,963</b>	<b>100.0</b>	Less than \$5,000.....	37	71.2	64,115	3.8
Less than \$5,000.....	506	47.8	905,082	0.4	\$5,000 to \$20,000.....	6	11.5	64,293	4.8
\$5,000 to \$20,000.....	211	19.9	2,170,945	0.9	\$20,000 to \$100,000.....	5	9.6	353,511	24.7
\$20,000 to \$100,000.....	162	15.3	7,724,686	3.4	\$100,000 to \$500,000.....	4	7.7	955,885	67.0
\$100,000 to \$500,000.....	107	16.1	24,785,318	10.8	<b>LAKE REGION:</b>				
\$500,000 to \$1,000,000.....	33	3.1	22,834,495	10.0	<b>LODE MINES—</b>				
\$1,000,000 to \$5,000,000.....	26	2.5	53,696,582	23.4	Michigan.....	22	100.0	34,476,336	100.0
\$5,000,000 and over.....	13	1.2	117,637,864	51.2	\$20,000 to \$100,000.....	3	13.6	205,340	0.6
					\$100,000 to \$500,000.....	8	36.4	2,038,998	5.9
<b>Arizona.....</b>	<b>141</b>	<b>100.0</b>	<b>87,868,431</b>	<b>100.0</b>	\$500,000 to \$1,000,000.....	3	13.6	2,558,840	7.4
Less than \$5,000.....	67	47.5	121,053	0.1	\$1,000,000 and over <sup>1</sup> .....	8	36.4	29,676,160	85.1
\$5,000 to \$20,000.....	24	17.0	234,804	0.3	<b>CENTRAL REGION:<sup>3</sup></b>				
\$20,000 to \$100,000.....	20	14.2	1,016,873	1.2	<b>LODE MINES.....</b>	<b>274</b>	<b>100.0</b>	<b>44,184,673</b>	<b>100.0</b>
\$100,000 to \$500,000.....	12	8.5	2,708,702	3.1	Less than \$5,000.....	69	25.2	153,271	0.3
\$500,000 to \$1,000,000.....	3	2.1	2,167,314	2.5	\$5,000 to \$20,000.....	48	17.5	490,042	1.1
\$1,000,000 to \$5,000,000.....	7	5.0	15,230,512	17.3	\$20,000 to \$100,000.....	65	23.7	3,005,007	8.2
\$5,000,000 and over.....	8	5.7	66,389,173	75.6	\$100,000 to \$500,000.....	79	28.8	19,107,262	43.2
					\$500,000 to \$1,000,000.....	6	2.2	4,028,674	9.1
<b>California.....</b>	<b>131</b>	<b>100.0</b>	<b>11,432,821</b>	<b>100.0</b>	\$1,000,000 and over <sup>1</sup> .....	7	2.6	16,968,617	38.0
Less than \$5,000.....	58	44.3	101,055	0.9	<b>Arkansas.....</b>	<b>11</b>	<b>100.0</b>	<b>14,595</b>	<b>100.0</b>
\$5,000 to \$20,000.....	26	19.8	260,709	2.3	Less than \$5,000.....	11	100.0	14,595	100.0
\$20,000 to \$100,000.....	27	20.6	1,382,913	12.1	<b>Illinois.....</b>	<b>6</b>	<b>100.0</b>	<b>621,296</b>	<b>100.0</b>
\$100,000 to \$500,000.....	13	9.9	2,978,090	26.0	Less than \$100,000 <sup>4</sup> .....	3	50.0	89,503	14.4
\$500,000 and over <sup>1</sup> .....	7	5.3	6,710,044	58.7	\$100,000 to \$500,000.....	3	50.0	531,793	85.6
					<b>Kansas.....</b>	<b>30</b>	<b>100.0</b>	<b>4,872,968</b>	<b>100.0</b>
<b>Colorado.....</b>	<b>220</b>	<b>100.0</b>	<b>19,424,539</b>	<b>100.0</b>	Less than \$5,000.....	5	16.7	7,047	0.1
Less than \$5,000.....	100	45.5	195,332	1.0	\$5,000 to \$20,000.....	4	13.3	43,000	0.9
\$5,000 to \$20,000.....	62	27.0	652,364	3.4	\$20,000 to \$100,000.....	7	23.3	442,090	9.1
\$20,000 to \$100,000.....	38	16.5	1,660,626	8.5	\$100,000 and over <sup>1</sup> .....	14	46.7	4,380,831	89.9
\$100,000 to \$500,000.....	22	9.6	4,202,039	21.6	<b>Missouri<sup>5</sup>.....</b>	<b>98</b>	<b>100.0</b>	<b>15,879,177</b>	<b>100.0</b>
\$500,000 to \$1,000,000.....	3	1.3	2,357,628	12.1	Less than \$5,000.....	42	45.2	107,623	0.7
\$1,000,000 and over <sup>1</sup> .....	5	2.2	10,366,550	53.3	\$5,000 to \$20,000.....	20	21.5	177,241	1.1
					\$20,000 to \$100,000.....	19	20.4	774,886	4.9
<b>Idaho.....</b>	<b>60</b>	<b>100.0</b>	<b>11,286,947</b>	<b>100.0</b>	\$100,000 to \$500,000.....	8	8.6	1,631,775	9.6
Less than \$5,000.....	26	43.3	45,298	0.4	\$1,000,000 and over <sup>1</sup> .....	4	4.3	18,267,650	88.7
\$5,000 to \$20,000.....	9	15.0	82,188	0.7	<b>Oklahoma.....</b>	<b>111</b>	<b>100.0</b>	<b>18,979,726</b>	<b>100.0</b>
\$20,000 to \$100,000.....	11	18.3	550,083	4.9	Less than \$5,000.....	8	7.2	20,684	0.1
\$100,000 to \$500,000.....	9	15.0	2,977,985	26.4	\$5,000 to \$20,000.....	18	16.2	205,884	1.1
\$500,000 and over <sup>1</sup> .....	5	8.3	7,611,308	67.6	\$20,000 to \$100,000.....	31	27.9	1,854,355	9.8
					\$100,000 to \$500,000.....	48	43.2	12,967,860	66.3
<b>Montana.....</b>	<b>153</b>	<b>100.0</b>	<b>39,623,472</b>	<b>100.0</b>	\$500,000 and over <sup>1</sup> .....	6	5.4	4,531,493	23.9
Less than \$5,000.....	95	62.1	155,673	0.4	<b>Wisconsin.....</b>	<b>23</b>	<b>100.0</b>	<b>3,816,911</b>	<b>100.0</b>
\$5,000 to \$20,000.....	27	17.6	278,304	0.7	Less than \$5,000.....	3	13.0	3,872	0.1
\$20,000 to \$100,000.....	11	7.2	471,698	1.2	\$5,000 to \$20,000.....	4	17.4	35,374	0.9
\$100,000 to \$500,000.....	10	6.5	2,572,160	6.5	\$20,000 to \$100,000.....	7	30.4	469,614	12.3
\$500,000 to \$1,000,000.....	3	2.0	1,661,478	4.2	\$100,000 and over <sup>1</sup> .....	9	39.1	3,308,551	86.7
\$1,000,000 and over <sup>1</sup> .....	7	4.6	34,484,159	87.0	<b>EASTERN AND SOUTHERN REGIONS:<sup>6</sup></b>				
					<b>LODE MINES—</b>				
<b>Nevada.....</b>	<b>178</b>	<b>100.0</b>	<b>17,080,823</b>	<b>100.0</b>	Vermont, New Jersey, New York, Pennsylvania, Tennessee, and Georgia.....	13	100.0	7,222,792	100.0
Less than \$5,000.....	98	55.1	191,829	1.1	Less than \$100,000 <sup>10</sup> .....	5	38.5	50,982	0.7
\$5,000 to \$20,000.....	32	18.0	303,674	1.8	\$100,000 to \$500,000.....	8	23.1	1,066,845	14.8
\$20,000 to \$100,000.....	24	13.5	1,167,740	6.8	\$500,000 and over <sup>1</sup> .....	5	38.5	6,104,965	84.5
\$100,000 to \$500,000.....	15	8.4	3,468,759	20.3					
\$500,000 to \$1,000,000.....	6	3.4	3,371,923	19.7					
\$1,000,000 and over <sup>1</sup> .....	3	1.7	8,581,869	50.2					
<b>New Mexico.....</b>	<b>43</b>	<b>100.0</b>	<b>8,135,067</b>	<b>100.0</b>					
Less than \$5,000.....	19	44.2	25,341	0.3					
\$5,000 to \$20,000.....	13	30.2	137,453	1.7					
\$20,000 to \$100,000.....	3	7.0	119,042	1.5					
\$100,000 to \$500,000.....	3	11.6	1,155,538	14.2					
\$500,000 and over <sup>1</sup> .....	3	7.0	6,687,693	82.3					
<b>Utah.....</b>	<b>86</b>	<b>100.0</b>	<b>27,824,207</b>	<b>100.0</b>					
Less than \$5,000.....	28	32.6	46,435	0.2					

<sup>1</sup> Includes the group "\$1,000,000 to \$5,000,000."

<sup>2</sup> Includes the group "\$5,000,000 and over."

<sup>3</sup> Includes the groups "\$500,000 to \$1,000,000" and "\$5,000,000 and over."

<sup>4</sup> Includes the group "\$100,000 to \$500,000."

<sup>5</sup> Includes the groups "Less than \$5,000" and "\$5,000 to \$20,000."

<sup>6</sup> Exclusive of 1 Missouri copper enterprise.

<sup>7</sup> Includes the groups "\$5,000 to \$20,000" and "\$20,000 to \$100,000."

<sup>8</sup> Includes the groups "\$500,000 to \$1,000,000" and "\$1,000,000 to \$5,000,000."

<sup>9</sup> Includes 1 Missouri copper enterprise.

<sup>10</sup> Includes the groups "Less than \$5,000"; "\$5,000 to \$20,000"; and "\$20,000 to \$100,000."

Size of enterprises according to average number of wage earners employed.—Table 15 shows for the United States and for all metal-mining industries as a whole, and by mining regions for each of the metal-mining industries, the producing enterprises classified according to the average number of wage earners employed. Of the 1,479 enterprises engaged in the metal-mining industries in the United States, 242 employed no wage earners, and 1,099, or 74.3 per cent of the total number of enterprises, had fewer than 101 wage earners each and employed only 20.9 per cent of the total average number of wage earners. On the other hand

138 enterprises, or 9.4 per cent of the total number, had more than 100 wage earners each and employed 79 per cent of the total average number of wage earners. A relatively large number of small enterprises, as measured by the average number of wage earners, is characteristic of the combined industries for the United States and of each of the industries in the several regions except copper mining in the Lake Region, and lead and zinc mining in the Eastern and Southern Regions, in which regions there are very few enterprises and most of them are large.

TABLE 15.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS: 1919.

INDUSTRY AND MINING REGION.	TOTAL.		ENTERPRISES EMPLOYING—													
	Number of enterprises.	Wage earners (average number).	No wage earners.		1 to 5 wage earners.				6 to 20 wage earners.				21 to 50 wage earners.			
			Enterprises.	Per cent of total.	Enterprises.		Wage earners.		Enterprises.		Wage earners.		Enterprises.		Wage earners.	
					Number.	Per cent of total.	Average number.	Per cent of total.	Number.	Per cent of total.	Average number.	Per cent of total.	Number.	Per cent of total.	Average number.	Per cent of total.
UNITED STATES, all industries...	1,479	82,417	242	16.4	494	33.4	1,150	1.4	334	22.6	3,687	4.5	180	12.2	6,026	7.3
COPPER.....	195	43,717	16	8.2	53	27.2	129	0.3	35	17.9	406	0.9	27	13.8	859	2.0
Western Region.....	168	30,937	16	9.5	52	31.0	126	0.4	34	20.2	391	1.3	24	14.3	747	2.4
Lake Region.....	22	12,285											3	13.6	112	0.9
Central, Eastern, and Southern Regions.....	5	545			1	20.0	3	0.6	1	20.0	15	2.8				
LEAD AND ZINC.....	432	21,894	41	9.5	121	28.0	266	1.2	104	24.1	1,195	5.5	74	17.1	2,443	11.2
Western Region.....	151	6,619	19	12.6	56	37.1	117	1.8	36	23.8	401	6.1	12	7.9	355	5.4
Central Region.....	274	12,532	22	8.0	65	23.7	149	1.2	66	24.1	788	6.1	62	22.6	2,088	16.7
Eastern and Southern Regions.....	7	2,733							2	28.6	26	1.0				
GOLD AND SILVER, LOSE MINES.....	740	15,436	151	20.4	273	36.9	643	4.2	178	24.1	1,872	12.1	71	9.6	2,474	16.0
Western Region <sup>1</sup> .....	740	15,436	151	20.4	273	36.9	643	4.2	178	24.1	1,872	12.1	71	9.6	2,474	16.0
GOLD, FLACER MINES.....	112	1,380	34	30.4	47	42.0	112	8.1	17	15.2	214	15.5	8	7.1	250	18.1
Western Region.....	112	1,380	34	30.4	47	42.0	112	8.1	17	15.2	214	15.5	8	7.1	250	18.1

INDUSTRY AND MINING REGION.	ENTERPRISES EMPLOYING—															
	51 to 100 wage earners.				101 to 500 wage earners.				501 to 1,000 wage earners.				Over 1,000 wage earners.			
	Enterprises.		Wage earners.		Enterprises.		Wage earners.		Enterprises.		Wage earners.		Enterprises.		Wage earners.	
	Number.	Per cent of total.	Average number.	Per cent of total.	Number.	Per cent of total.	Average number.	Per cent of total.	Number.	Per cent of total.	Average number.	Per cent of total.	Number.	Per cent of total.	Average number.	Per cent of total.
UNITED STATES, all industries...	91	6.1	6,386	7.7	106	7.2	23,082	28.0	16	1.1	11,229	13.6	16	1.1	30,857	37.4
COPPER.....	11	5.6	835	1.9	30	15.4	8,676	19.8	12	6.2	8,817	20.2	11	5.6	23,995	54.9
Western Region.....	7	4.2	549	1.8	20	11.9	6,424	20.8	7	4.2	5,323	17.2	8	4.8	17,377	56.2
Lake Region.....	3	13.6	224	1.8	8	36.4	1,787	14.6	5	22.7	3,494	28.6	3	13.6	6,618	54.1
Central, Eastern, and Southern Regions.....	1	20.0	62	11.4	2	40.0	465	85.3								
LEAD AND ZINC.....	45	10.4	3,064	14.0	39	9.0	7,164	32.7	4	0.9	2,412	11.0	4	0.9	5,250	24.4
Western Region.....	10	6.6	696	10.5	15	9.9	2,774	41.9	2	1.3	1,102	16.6	1	0.7	1,174	17.7
Central Region.....	35	12.8	2,358	18.8	21	7.7	3,821	30.5	1	0.4	668	5.3	2	0.7	2,680	21.4
Eastern and Southern Regions.....					3	42.9	699	20.8	1	14.3	642	23.5	1	14.3	1,496	54.7
GOLD AND SILVER, LOSE MINES.....	31	4.2	2,244	14.5	35	4.7	6,691	43.3					1	0.1	1,512	9.8
Western Region <sup>1</sup> .....	31	4.2	2,244	14.5	35	4.7	6,691	43.3					1	0.1	1,512	9.8
GOLD, FLACER MINES.....	4	3.6	253	18.3	2	1.8	551	39.9								
Western Region.....	4	3.6	253	18.3	2	1.8	551	39.9								

<sup>1</sup> Includes 1 enterprise in the Southern Region (Georgia).



Size of enterprises according to acreage of mineral land.—Table 16 shows for the United States for all metal-mining industries as a whole, by mining regions, and by industries for each of the mining regions, the producing enterprises classified according to number of acres of mineral land operated. The greater number of enterprises were in the classes operating the least acreage, but although the enterprises operating more than 500 acres were relatively few, their holdings

of mineral land were such that they reported more than four-fifths of the acreage for the United States for all metal-mining industries combined.

The enterprises having small holdings outnumbered those having large holdings in each of the industries in each region except in the copper-mining industry in the Lake and Central Regions, and in the lead and zinc mining industry in the Eastern and Southern Regions.

TABLE 16.—SIZE OF PRODUCING ENTERPRISES, BY NUMBER OF ACRES OF MINERAL LAND OPERATED: 1919.

MINING REGION AND ACRES PER ENTERPRISE.	ENTERPRISES.		MINERAL LAND OPERATED.		MINING REGION AND ACRES PER ENTERPRISE.	ENTERPRISES.		MINERAL LAND OPERATED.	
	Number.	Per cent distribution.	Acres.	Per cent distribution.		Number.	Per cent distribution.	Acres.	Per cent distribution.
UNITED STATES, all industries.....	1,426	100.0	783,503	100.0	WESTERN REGION—Continued.				
1 to 50.....	535	37.5	12,541	1.7	GOLD, PLACER MINES—Continued.				
50 to 100.....	249	17.5	19,476	2.7	100 to 200.....	14	12.5	2,435	3.9
100 to 200.....	230	16.1	34,896	4.7	200 to 500.....	23	20.5	7,679	12.2
200 to 500.....	210	14.7	67,226	9.2	500 to 1,000.....	11	9.8	8,430	13.4
500 to 1,000.....	97	6.8	69,583	9.5	1,000 and over.....	23	20.5	42,570	67.7
1,000 and over.....	105	7.4	530,031	72.3	LAKE REGION.....	21		65,531	
WESTERN REGION.....	1,137		574,457		COFFEE.....	21	100.0	65,531	100.0
COFFEE.....	167	100.0	318,618	100.0	200 to 500.....	2	9.5	720	1.1
1 to 50.....	30	18.0	720	0.2	500 to 1,000.....	6	28.6	4,609	6.9
50 to 100.....	21	12.6	1,815	0.6	1,000 and over.....	13	61.9	61,202	92.0
100 to 200.....	31	18.6	4,487	1.4	CENTRAL REGION.....	257		65,506	
200 to 500.....	41	24.5	13,255	4.2	LEAD AND ZINC.....	255	100.0	64,654	100.0
500 to 1,000.....	19	11.4	13,881	4.4	1 to 50.....	171	66.8	4,427	6.8
1,000 and over.....	25	15.0	284,460	80.3	50 to 100.....	33	12.9	2,546	3.9
LEAD AND ZINC.....	149	100.0	50,419	100.0	100 to 200.....	30	11.7	4,361	6.7
1 to 50.....	29	19.5	597	1.2	200 to 500.....	15	5.9	4,375	6.8
50 to 100.....	31	20.8	2,218	4.4	500 to 1,000.....	2	0.8	1,528	2.4
100 to 200.....	28	18.8	4,899	8.7	1,000 and over.....	5	2.0	47,417	73.3
200 to 500.....	34	22.8	11,457	22.7	COFFEE.....	1	100.0	912	100.0
500 to 1,000.....	17	11.4	11,426	22.7	500 to 1,000.....	1	100.0	912	100.0
1,000 and over.....	10	6.7	20,332	40.3	EASTERN AND SOUTHERN REGIONS.....	11		26,389	
GOLD AND SILVER, LODE MINES.....	709	100.0	142,573	100.0	COFFEE.....	4	100.0	6,750	100.0
1 to 50.....	281	39.6	6,357	4.5	50 to 100.....	1	25.0	60	0.9
50 to 100.....	146	20.6	11,534	8.1	100 to 200.....	1	25.0	200	3.0
100 to 200.....	124	17.5	18,286	12.8	200 to 500.....	1	25.0	220	3.3
200 to 500.....	94	13.3	29,520	20.7	1,000 and over.....	1	25.0	6,270	92.9
500 to 1,000.....	39	5.5	27,500	19.3	LEAD AND ZINC.....	7	100.0	20,189	100.0
1,000 and over.....	25	3.5	49,426	34.7	100 to 200.....	2	28.6	288	1.4
GOLD, PLACER MINES.....	112	100.0	62,857	100.0	500 to 1,000.....	2	28.6	1,547	7.7
1 to 50.....	24	21.4	440	0.7	1,000 and over.....	3	42.9	18,354	90.9
50 to 100.....	17	15.2	1,308	2.1					

<sup>1</sup> Not including 53 enterprises comprising reduction works and operations on dumps and old tailings.  
<sup>2</sup> Includes 1 enterprise in Georgia to avoid disclosure of individual operations.

#### PERSONS ENGAGED IN THE INDUSTRIES.

Persons according to class and sex.—Table 17 shows the persons engaged in the metal-mining industries by classes, gives the total number of males and females (except among the wage earners) in each class, and the per cent each class is of the total number of persons. For the United States, for all metal-mining industries as a whole, the salaried employees, numbering 6,445, constituted only 7.1 per cent of the total number of persons engaged in the industries. The females reported as salaried employees numbered 482, which was 7.5 per cent of the total number of salaried employees, and five-tenths of 1 per cent of the total number of persons engaged in the industries. They were mostly in the grade, "Clerks and other subordinate salaried employees," of which they constituted nearly one-sixth. The average number of wage earners reported for the year was 82,417, or 91.4 per cent of the total number of persons. As shown in the detailed statistics, Table 31, 153 wage earners, or only two-tenths of 1

per cent, of the number reported in producing enterprises on a representative day were females. Proprietors and firm members constituted 1.5 per cent of the total number of persons engaged in the metal-mining industries; 810, or three-fifths of these proprietors, performed manual labor in or about the mines. This number supplemented the wage earners by approximately 1 per cent of their number. The table shows that proprietors and firm members were relatively more numerous in gold mining than in copper and lead and zinc mining and that a larger proportion of them were engaged in manual labor, thus supplanting a relatively larger number of wage earners than in the copper and lead and zinc mining industries. These facts are in accord with data given in Table 15 which shows the large proportion of small enterprises in the gold-mining industries and with data given in Table 13 which shows the large number of enterprises in the gold placer-mining industry controlled by individuals and firms.

TABLE 17.—PERSONS ENGAGED IN PRODUCING ENTERPRISES: 1919.

INDUSTRY AND MINING REGION.	Total.	PROPRIETORS AND FIRM MEMBERS.			SALARIED OFFICERS.			SUPERINTENDENTS AND MANAGERS.			TECHNICAL EMPLOYEES.			CLERKS AND OTHER SUBORDINATE SALARIED EMPLOYEES.			WAGE EARNERS.		Proprietors performing manual labor.
		Male.	Female.	Per cent of total.	Male.	Female.	Per cent of total.	Male.	Female.	Per cent of total.	Male.	Female.	Per cent of total.	Male.	Female.	Per cent of total.	Average number.	Per cent of total.	
UNITED STATES, all industries.....	90,211	1,296	53	1.5	615	10	0.7	1,707	2	1.9	1,210	7	1.3	2,431	463	3.2	82,417	91.4	810
COPPER.....	46,999	98	5	0.2	182	3	0.4	596	.....	1.3	713	4	1.5	1,493	188	3.6	43,717	93.0	62
Western Region.....	33,494	98	5	0.3	124	3	0.4	452	.....	1.3	620	3	1.9	1,112	140	3.7	30,987	92.4	62
Lake Region.....	12,917	.....	.....	.....	56	.....	0.4	133	.....	1.0	81	1	0.6	365	46	3.2	12,236	94.7	.....
Central, Eastern, and Southern Regions.....	588	.....	.....	.....	2	.....	0.3	11	.....	1.9	12	.....	2.0	16	2	3.1	545	92.7	.....
LEAD AND ZINC.....	24,030	394	18	1.7	165	1	0.7	546	1	2.3	247	2	1.0	563	179	2.2	21,684	91.1	186
Western Region.....	7,319	108	9	1.5	57	.....	0.8	161	.....	2.2	116	1	1.6	209	44	3.5	6,619	90.4	59
Central Region.....	13,719	290	9	2.2	106	1	0.8	355	.....	2.6	74	.....	0.5	272	81	2.6	12,852	91.3	127
Eastern and Southern Regions.....	2,992	1	.....	( <sup>1</sup> )	3	.....	0.1	30	1	1.0	57	1	1.9	112	54	5.5	2,783	91.4	.....
GOLD AND SILVER, LOSE MINES.....	17,531	684	28	4.1	280	6	1.3	504	1	2.9	239	1	1.4	319	83	2.3	15,436	88.0	485
Western Region <sup>2</sup> .....	17,531	684	28	4.1	280	6	1.3	504	1	2.9	239	1	1.4	319	83	2.3	15,436	88.0	485
GOLD, FLACER MINES.....	1,651	120	2	7.4	38	.....	2.3	61	.....	3.7	11	.....	0.7	26	13	2.4	1,380	83.6	77
Western Region.....	1,651	120	2	7.4	38	.....	2.3	61	.....	3.7	11	.....	0.7	26	13	2.4	1,380	83.6	77

<sup>1</sup> Less than one-tenth of 1 per cent.

<sup>2</sup> Includes 1 enterprise in the Southern Region (Georgia).

Wage earners, by occupations.—Table 18 presents by occupations of the wage earners employed in the metal-mining industries on December 15 or the nearest representative day.

TABLE 18.—WAGE EARNERS, BY OCCUPATIONS, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND MINING REGION.	NUMBER OF WAGE EARNERS, DEC. 15 OR NEAREST REPRESENTATIVE DAY.											
	Total.	All classes.				Foremen, shift bosses, etc.			Enginemen, firemen, hoistmen, electricians, mechanics, etc.			
		Above ground.		Below ground.		Number.			Number.		Per cent of total.	Per cent of total.
		Number.	Per cent of total.	Number.	Per cent of total.	Above ground.	Below ground.	Above ground.	Below ground.			
UNITED STATES, all industries.....	90,833	36,865	40.6	53,968	59.4	1,595	2,199	4.2	10,919	2,131	14.4	
COPPER.....	46,999	20,105	42.9	26,704	56.1	307	1,137	4.2	6,167	1,254	16.2	
Western Region.....	32,686	14,489	44.4	18,177	55.6	641	806	4.4	4,062	1,045	15.7	
Lake Region.....	12,436	5,400	43.4	7,036	56.6	154	298	3.6	1,990	182	17.5	
Central, Eastern, and Southern Regions.....	707	216	30.6	491	69.4	12	33	6.4	85	37	35.8	
LEAD AND ZINC.....	24,030	9,471	39.2	16,697	63.8	369	573	3.6	2,576	363	11.2	
Western Region.....	7,319	5,327	30.2	5,813	69.8	102	201	3.6	668	186	10.3	
Central Region.....	13,719	5,702	37.6	9,498	62.4	308	324	3.5	1,611	128	11.5	
Eastern and Southern Regions.....	2,671	1,265	47.0	1,416	53.0	59	48	4.0	297	48	12.9	
GOLD AND SILVER, LOSE MINES.....	17,532	5,830	33.7	11,492	65.3	313	485	4.6	1,713	515	12.9	
Western Region <sup>1</sup> .....	17,532	5,830	33.7	11,492	65.3	313	485	4.6	1,713	515	12.9	
GOLD, FLACER MINES.....	1,534	1,459	95.1	75	4.9	106	4	7.2	463	.....	30.2	
Western Region.....	1,534	1,459	95.1	75	4.9	106	4	7.2	463	.....	30.2	

INDUSTRY AND MINING REGION.	NUMBER OF WAGE EARNERS, DEC. 15 OR NEAREST REPRESENTATIVE DAY—continued.										
	Miners and drillmen, including their helpers.			Timbermen, trackmen, trammers, and men engaged in hauling, etc.			Muckers, loaders, and others not classified.			In mills and beneficiating plants.	
	Number.		Per cent of total.	Number.		Per cent of total.	Number.		Per cent of total.	Number (above ground).	Per cent of total.
	Above ground.	Below ground.		Above ground.	Below ground.		Above ground.	Below ground.			
UNITED STATES, all industries.....	1,624	21,352	25.3	1,642	14,682	18.0	7,897	13,604	23.7	13,188	14.5
COPPER.....	1,185	9,455	23.2	1,005	8,115	19.9	4,352	5,743	22.0	6,589	14.4
Western Region.....	1,185	7,246	25.8	979	5,271	19.1	3,167	3,809	21.3	4,435	15.6
Lake Region.....	.....	2,004	16.1	6	2,710	21.8	1,168	1,842	24.2	2,082	16.7
Central, Eastern, and Southern Regions.....	.....	205	29.0	20	134	21.8	27	92	16.8	72	19.2
LEAD AND ZINC.....	109	6,857	28.6	304	4,361	17.8	1,477	4,544	23.0	4,636	17.7
Western Region.....	28	2,685	32.7	72	1,451	18.3	472	1,279	21.0	1,172	14.1
Central Region.....	32	3,658	24.4	125	2,260	15.7	632	3,028	24.9	3,044	20.1
Eastern and Southern Regions.....	49	493	20.3	107	600	28.7	323	167	15.3	430	15.7
GOLD AND SILVER, LOSE MINES.....	208	4,980	30.0	206	2,202	14.4	1,389	3,310	26.8	1,661	11.3
Western Region <sup>1</sup> .....	208	4,980	30.0	206	2,202	14.4	1,389	3,310	26.8	1,661	11.3
GOLD, FLACER MINES.....	122	60	11.9	37	4	2.7	729	7	48.0	2	0.1
Western Region.....	122	60	11.9	37	4	2.7	729	7	48.0	2	0.1

<sup>1</sup> Includes 1 enterprise in the Southern Region (Georgia).

The table also gives the percentage distribution by classes and the number in each class employed above ground and below ground. The table distinguishes between men engaged in the more peculiarly mining occupations, such as miners, drillmen, timbermen, trackmen, trammers, and their helpers; men in other skilled trades, such as enginemen, hoistmen, electricians, firemen, machinists, carpenters, and other mechanics; and less skilled and unclassified laborers. For the combined industries for the United States, 14.5 per cent of the total number were employed in beneficiating plants, and not in mining operations proper. Approximately 60 per cent of all the wage earners in the metal-mining industries in the United States were reported as employed below ground. For wage earners in mining proper—that is, exclusive of those employed in mills and beneficiating plants—the proportion employed below ground is high, being approximately 70 per cent, and for the several metalliferous lode-mining industries these proportions were 66 per cent in copper mining, 78 per cent in lead and zinc mining, and 75 per cent in gold and silver lode mining. In the lode-mining industries the largest class of wage earners reported comprised the miners and drillmen, including their helpers, and the next largest class the muckers, loaders, laborers, and others not classified. In the

placer-mining industry, in which conditions are different, the largest number of wage earners was in the group including the unclassified laborers.

**Wage earners, by months.**—Table 19 shows the number of wage earners employed in all metal-mining enterprises on the 15th day or nearest representative day of each month, the average number of wage earners, and also the months of minimum and maximum employment, and the ratio of the minimum to the maximum number. The statistics are presented for producing enterprises by industries and by states, for each industry, grouped by mining regions. The same data is shown for nonproducing enterprises for all industries combined. The changes in the number employed from month to month reflect conditions prevailing in the metal-mining industries during the census year—an unusual or abnormal year in these industries. The table shows for the principal industries—copper and lead and zinc—and consequently for all industries combined, that January was the month of maximum employment and June was the month of minimum employment. This indicates the effect of the war boom in these industries and the following collapse. The statistics for gold and silver lode mining probably indicate normal fluctuation in employment, as conditions affecting gold and silver mining, although adverse, were uniform during the year.

TABLE 19.—WAGE EARNERS, BY MONTHS, ALL ENTERPRISES: 1919.

[The month of maximum employment for each industry and state is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY, MINING REGION, AND STATE.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>UNITED STATES</b> .....	86,108	<b>101,768</b>	91,322	85,524	81,498	78,801	<i>78,648</i>	82,250	84,060	<b>84,764</b>	87,219	89,042	87,808	77.3
Producing enterprises.....	82,417	<b>99,801</b>	88,797	82,644	78,419	75,178	<i>74,794</i>	77,944	80,335	<b>80,510</b>	82,935	84,766	83,481	75.4
Copper.....	43,717	<b>58,085</b>	49,136	43,701	40,675	38,374	<i>37,885</i>	39,919	41,386	<b>42,595</b>	44,395	45,246	43,267	65.3
Lead and zinc.....	21,884	<b>25,194</b>	23,434	22,574	21,806	20,196	<i>19,949</i>	20,207	21,050	<b>21,163</b>	21,579	22,631	23,196	79.4
Gold and silver, lode mines.....	15,436	<b>14,778</b>	14,915	15,095	14,921	15,184	15,540	16,319	16,489	<b>15,349</b>	15,536	15,456	15,670	89.7
Gold, placer mines.....	1,390	<i>1,874</i>	1,312	<i>1,874</i>	1,317	1,424	1,420	1,499	1,430	<b>1,404</b>	1,425	1,433	1,348	85.0
<b>COPPER:</b>														
Western Region—														
Arizona.....	14,237	<b>18,079</b>	15,347	12,406	<i>11,840</i>	12,200	12,322	13,337	14,610	<b>14,925</b>	15,243	15,294	15,241	65.5
California.....	1,055	<b>1,855</b>	1,164	1,109	1,050	1,012	982	996	1,076	<b>985</b>	1,025	1,050	955	76.1
Colorado.....	35	<b>38</b>	37	43	31	37	35	33	35	<b>32</b>	32	34	35	58.1
Idaho.....	87	<b>102</b>	111	101	78	98	123	108	88	<b>77</b>	71	47	40	32.5
Montana, Oregon, and Washington.....	8,599	<b>12,661</b>	8,910	8,393	8,038	7,715	7,778	8,316	8,347	<b>7,624</b>	8,477	9,028	7,906	60.2
Utah, Nevada, and New Mexico.....	6,924	<b>10,100</b>	7,744	6,177	6,169	6,071	6,138	6,406	<i>6,989</i>	<b>7,057</b>	7,266	7,294	6,787	58.7
Lake Region—														
Michigan.....	12,235	<b>15,038</b>	15,177	14,856	12,934	10,688	<i>10,040</i>	10,187	10,923	<b>11,445</b>	11,820	11,879	11,833	66.2
Central, Eastern, and Southern Regions—														
Missouri, Vermont, and Tennessee.....	545	<b>752</b>	646	616	535	555	470	531	378	<b>446</b>	461	620	530	50.3
<b>LEAD AND ZINC:</b>														
Western Region—														
Arizona.....	101	<b>152</b>	111	115	127	98	85	88	86	<b>89</b>	84	90	93	53.9
California.....	115	<b>137</b>	120	132	135	120	112	98	93	<b>95</b>	105	108	112	67.2
Colorado.....	686	<b>1,615</b>	1,444	1,445	1,138	681	577	647	700	<b>747</b>	753	759	686	34.4
Idaho.....	1,820	<b>2,258</b>	2,239	1,617	1,588	1,791	1,751	1,941	1,401	<b>877</b>	1,281	2,452	2,644	33.2
Montana, Nevada, New Mexico, South Dakota, Utah, and Washington.....	3,647	<b>4,868</b>	3,876	3,538	3,393	3,300	3,643	3,553	3,454	<b>3,523</b>	3,710	3,786	3,890	78.6
Central Region—														
Arkansas.....	28	<b>49</b>	42	35	36	35	40	27	27	<b>12</b>	14	14	5	10.2
Illinois.....	239	<b>234</b>	235	237	248	248	237	253	245	<b>238</b>	243	239	231	87.4
Kansas.....	1,141	<b>850</b>	941	1,080	1,030	1,122	1,028	1,122	1,309	<b>1,277</b>	1,346	1,264	1,223	63.2
Missouri.....	4,798	<b>5,748</b>	5,233	4,971	4,829	4,586	4,475	4,402	4,684	<b>4,829</b>	4,667	4,548	4,544	76.6
Oklahoma.....	5,253	<b>5,429</b>	4,950	5,064	5,024	4,663	4,503	4,557	5,346	<b>5,847</b>	5,759	5,745	5,849	77.9
Wisconsin.....	1,078	<b>1,413</b>	1,234	1,237	1,118	1,078	986	987	1,040	<b>976</b>	970	980	917	64.9
Eastern and Southern Regions—														
New Jersey, New York, Pennsylvania, and Tennessee.....	2,733	<b>3,071</b>	2,999	3,103	2,840	2,535	2,512	<i>2,444</i>	2,665	<b>2,652</b>	2,647	2,656	2,672	78.8

TABLE 19.—WAGE EARNERS, BY MONTHS, ALL ENTERPRISES: 1919—Continued.

INDUSTRY, MINING REGION, AND STATE,	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>GOLD AND SILVER, LOSE MINES:</b>														
Western Region—														
Arizona.....	642	607	580	579	581	628	655	710	589	658	739	710	668	78.3
California.....	2,881	2,864	2,911	2,864	2,778	2,914	2,846	2,864	2,903	2,768	2,821	2,927	2,968	82.8
Colorado.....	3,495	3,435	3,244	3,322	3,329	3,565	3,751	3,635	3,813	3,471	3,581	3,452	3,491	84.8
Idaho.....	349	244	307	214	240	326	404	447	468	456	425	378	381	44.4
Montana.....	1,107	975	916	970	1,005	1,012	1,106	1,215	1,223	1,221	1,313	1,239	1,079	69.7
Nevada.....	2,084	1,768	1,972	2,076	2,015	2,212	2,353	2,457	2,394	1,630	1,817	2,061	2,225	65.3
New Mexico.....	393	406	413	424	368	357	385	405	417	408	399	378	374	84.2
Utah.....	2,107	2,286	2,276	2,225	2,243	1,775	1,608	2,005	2,241	2,357	2,251	2,299	2,408	65.9
Washington.....	149	153	131	144	161	168	166	165	167	140	123	123	110	65.5
Oregon, South Dakota, and Texas <sup>1</sup> .....	2,109	2,243	2,266	2,244	2,198	2,193	2,262	2,264	2,248	2,213	2,020	1,839	1,958	82.3
<b>GOLD, PLACER MINES:</b>														
California.....	1,102	1,011	1,047	1,009	1,010	1,106	1,110	1,210	1,148	1,126	1,155	1,183	1,099	83.4
Colorado.....	110	99	107	109	118	119	115	121	121	95	108	108	100	78.5
Nevada.....	19	28	26	27	24	18	15	17	18	18	16	10	11	35.7
Arizona, Idaho, Montana, New Mexico, Oregon, and Washington.....	149	136	153	129	165	181	180	151	143	155	146	153	138	72.9
Nonproducing enterprises.....	3,691	2,565	2,585	2,880	3,079	3,623	3,848	4,305	4,325	4,254	4,284	4,276	4,337	58.4
Western Region—														
California, Oregon, and Washington.....	386	348	264	255	263	318	323	352	442	522	518	545	564	43.5
Idaho, Montana, and Wyoming.....	617	400	436	429	487	578	673	805	725	722	709	708	677	40.7
Arizona, Nevada, and Utah.....	1,801	1,175	1,108	1,456	1,586	1,876	1,989	2,122	2,122	1,964	2,021	2,053	2,142	51.6
Colorado, South Dakota, and New Mexico.....	546	408	410	441	452	516	567	648	632	687	588	605	600	61.8
Lake Region—														
Michigan.....	181	181	177	164	173	191	113	209	223	208	196	170	167	50.7
Central Region—														
Kansas, Missouri, Oklahoma, and Wisconsin.....	54	29	18	36	30	51	58	65	72	70	77	75	67	23.4
Eastern and Southern Regions—														
New York, Georgia, North Carolina, and Virginia.....	106	128	114	99	88	93	95	105	109	111	115	105	110	68.8

<sup>1</sup> Includes Georgia.

It will be noted that the number of wage earners reported for enterprises on the representative day, which is presented in several other tables, differs from the numbers shown in Table 21 for any month. This is for the reason that the representative day selected for reporting wage earners in detail was different for different enterprises. Therefore, the aggregate for the representative day does not agree with the total of the numbers reported by each enterprise for any one month.

Days in operation.—The number of working days during the census year varied considerably for different enterprises in the metal-mining industries.

TABLE 20.—ALL ENTERPRISES, CLASSIFIED ACCORDING TO TIME IN OPERATION: 1919.

MINING REGION AND CLASS OF MINE.	Total.	ENTERPRISES OPERATING—				
		75 days and less.	76 to 150 days.	151 to 225 days.	226 to 300 days.	301 days and over.
UNITED STATES.....	1,979	120	364	353	384	758
Producing lode mines.....	1,367	89	249	210	282	537
Producing placer mines.....	112	18	33	16	10	35
Nonproducing mines.....	500	13	82	127	92	186
WESTERN REGION.....	1,656	78	301	295	298	684
Producing lode mines.....	1,068	49	188	153	197	471
Producing placer mines.....	112	18	33	16	10	35
Nonproducing mines.....	486	11	80	126	91	178
LAKE REGION.....	25	3	1	1	10	11
Producing lode mines.....	22	3	1	1	10	8
Nonproducing mines.....	3					3
CENTRAL REGION.....	281	41	58	56	73	53
Producing lode mines.....	274	39	57	55	72	51
Nonproducing mines.....	7	2	1	1	1	2
EASTERN AND SOUTHERN REGIONS.....	17	1	2	1	3	10
Producing lode mines.....	13	1	1	1	3	7
Nonproducing mines.....	4					3

Table 20 gives for the United States and for mining regions for producing lode and placer mines, and for nonproducing mines, the distribution of enterprises according to number of days in operation in 1919. The table shows for the United States as a whole that slightly less than one-fourth of the producing lode mines were in operation less than half time (under 151 days), and that approximately three-fifths were in operation less than full time (under 301 days). The percentages of short-time operations were greatest in the Western and Central Regions, which are the leading regions in the metal-mining industry.

Prevailing hours of labor.—In Table 21 all enterprises in the metal-mining industries are classified in accordance with prevailing hours of labor, and the number of enterprises and wage earners are given for each class. The statistics are given by states for mining regions for producing lode and placer and for nonproducing mines. Different hours for different classes of wage earners, such as those working above and below ground, or outside or inside of the mines, or wage earners in mills as distinct from those employed in mining operations, are the rule in the metalliferous lode-mining enterprises, in many districts. In the tabulation of census statistics, however, the wage earners of each enterprise are classed as a unit in accordance with the hours prevailing for the majority regardless of the fact that some worked more or fewer hours. For the combined producing and nonproducing industries in the United States, for nearly three-fifths of the enterprises employing wage earners, and for one-half of the total average

number of wage earners the prevailing hours of labor were 54 to 62 per week; and for approximately two-fifths of the enterprises and nearly one-half of the wage earners the prevailing hours were 44 to 53 per week. Enterprises and wage earners for which less than 44 and more than 63 hours per week prevailed were very few. In the Western Region hours ranging from 54 to 62 per week, resulting principally from the 9 or 10 hour day and 6-day week, but also from the 8-hour day and 7-day week in many enter-

prises, were most frequently reported, while hours ranging from 44 to 53 per week, indicating the 8-hour day and 6-day week, were reported by about a third of the enterprises. In the Lake Region the hours were 44 to 53 per week and the 8-hour day and 6-day week was the rule. These hours prevailed in the Central Region for more than four-fifths of the enterprises, but a considerable number of the wage earners employed in mills in these enterprises worked longer hours.

TABLE 21.—NUMBER OF PRODUCING AND OF NONPRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR: 1919.

MINING REGION AND STATE.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—								MINING REGION AND STATE.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
	Enterprises. <sup>1</sup>	Wage earners (av. number).	43 and under.		44 to 53.		54 to 62.		63 and over.			Enterprises. <sup>1</sup>	Wage earners (av. number).	43 and under.		44 to 53.		54 to 62.		63 and over.	
			Enterprises.	Wage earners (av. number).	Enterprises.	Wage earners (av. number).	Enterprises.	Wage earners (av. number).	Enterprises.	Wage earners (av. number).			Enterprises.	Wage earners (av. number).	Enterprises.	Wage earners (av. number).	Enterprises.	Wage earners (av. number).	Enterprises.	Wage earners (av. number).	
<b>UNITED STATES.....</b>	<b>1,720</b>	<b>86,108</b>	<b>8</b>	<b>139</b>	<b>683</b>	<b>40,996</b>	<b>1,010</b>	<b>43,239</b>	<b>19</b>	<b>1,784</b>	<b>WESTERN REGION—CON.</b>										
Producing lode mines...	1,156	81,037	5	125	626	39,827	620	39,436	8	1,649	WYOMING—										
Producing placer mines...	78	1,380	...	...	17	62	52	1,243	9	75	Nonproducing mines...	3	14	...	...	3	14	...	...	...	
Nonproducing mines...	483	3,691	3	14	140	1,107	338	2,560	2	10	<b>LAKE REGION:</b>										
<b>WESTERN REGION:<sup>2</sup></b>											Producing lode mines...	22	12,235	22	12,235	...	...	...	...	...	
Producing lode mines...	873	52,992	4	122	289	13,710	574	37,514	6	1,646	Nonproducing mines...	3	181	3	181	...	...	...	...	...	
Producing placer mines...	78	1,380	...	...	17	62	52	1,243	9	75	<b>MICHIGAN—</b>										
Nonproducing mines...	471	3,355	3	14	131	829	335	2,502	2	10	Producing lode mines...	22	12,235	22	12,235	...	...	...	...	...	
<b>ARIZONA—</b>											Nonproducing mines...	3	181	3	181	...	...	...	...	...	
Producing lode mines...	127	14,980	...	...	43	6,859	83	8,119	1	2	<b>CENTRAL REGION:</b>										
Producing placer mines...	78	1,380	...	...	17	62	52	1,243	9	75	Producing lode mines...	253	12,594	209	10,878	42	1,713	2	3	...	
Nonproducing mines...	89	778	...	...	23	196	66	582	...	...	Nonproducing mines...	6	54	4	51	2	3	...	...		
<b>CALIFORNIA—</b>											<b>ARKANSAS—</b>										
Producing lode mines...	104	4,051	...	...	23	1,066	79	2,755	2	230	Producing lode mines...	10	23	5	11	5	17	...	...		
Producing placer mines...	49	1,102	...	...	11	47	31	984	7	71	<b>ILLINOIS—</b>										
Nonproducing mines...	46	306	...	...	16	130	30	176	...	...	Producing lode mines...	6	239	2	89	4	150	...	...		
<b>COLOREADO—</b>											<b>KANSAS—</b>										
Producing lode mines...	188	4,466	...	...	2	116	93	1,532	93	2,818	Producing lode mines...	30	1,141	25	718	4	422	1	1	...	
Producing placer mines...	4	110	...	...	...	...	...	110	...	...	Nonproducing mines...	2	34	2	34	...	...	...	...		
Nonproducing mines...	57	407	...	...	25	101	32	306	...	...	<b>MISSOURI—</b>										
<b>IDAHO—</b>											Producing lode mines...	75	4,855	66	4,796	9	59	...	...	...	
Producing lode mines...	54	2,256	...	...	21	1,109	32	1,147	...	...	Nonproducing mines...	1	11	1	11	...	...	...	...		
Producing placer mines...	5	19	...	...	1	4	4	15	...	...	<b>OKLAHOMA—</b>										
Nonproducing mines...	46	340	1	9	10	77	35	254	...	...	Producing lode mines...	111	5,263	104	5,178	6	73	1	2	...	
<b>MONTANA—</b>											Nonproducing mines...	1	6	1	6	...	...	...	...		
Producing lode mines...	99	11,862	...	...	31	1,030	68	10,832	...	...	<b>WISCONSIN—</b>										
Producing placer mines...	7	63	...	...	2	3	5	60	...	...	Producing lode mines...	21	1,078	7	86	14	992	...	...		
Nonproducing mines...	35	263	...	...	10	60	25	203	...	...	Nonproducing mines...	2	3	...	...	2	3	...	...		
<b>NEVADA—</b>											<b>EASTERN AND SOUTHERN</b>										
Producing lode mines...	144	3,968	1	2	23	325	119	3,640	1	1	<b>REGIONS:</b>										
Producing placer mines...	3	19	...	...	...	...	...	19	...	...	Producing lode mines...	11	3,216	1	3	6	3,004	4	209	...	
Nonproducing mines...	114	646	...	...	9	40	105	606	...	...	Nonproducing mines...	3	101	2	46	1	55	...	...		
<b>NEW MEXICO—</b>											<b>NEW JERSEY—</b>										
Producing lode mines...	40	3,057	...	...	17	914	22	749	1	1,394	Producing lode mines...	2	1,779	2	1,779	...	...	...	...		
Producing placer mines...	1	2	...	...	1	2	...	...	...	...	<b>NEW YORK—</b>										
Nonproducing mines...	17	110	...	...	12	85	5	25	...	...	Producing lode mines...	1	118	1	118	...	...	...	...		
<b>OREGON—</b>											Nonproducing mines...	1	20	1	20	...	...	...	...		
Producing lode mines...	10	363	...	...	4	24	6	339	...	...	<b>NORTH CAROLINA—</b>										
Producing placer mines...	8	60	...	...	1	5	5	55	2	4	Producing lode mines...	1	26	1	26	...	...	...	...		
Nonproducing mines...	4	30	...	...	2	17	2	13	...	...	<b>PENNSYLVANIA—</b>										
<b>UTAH—</b>											Producing lode mines...	1	19	...	...	1	19	...	...		
Producing lode mines...	84	5,874	1	4	27	835	55	5,016	1	19	<b>TENNESSEE—</b>										
Producing placer mines...	45	377	2	5	17	97	24	265	2	10	Producing lode mines...	5	1,282	3	1,107	2	175	...	...		
Nonproducing mines...	...	...	...	...	...	...	...	...	...	...	<b>VERMONT—</b>										
<b>SOUTH DAKOTA, TEXAS,</b>											Producing lode mines...	2	18	1	3	...	...	...	...		
<b>AND GEORGIA—</b>											Nonproducing mines...	1	55	...	...	1	55	...	...		
Producing lode mines...	6	1,894	...	...	1	2	5	1,892	...	...	<b>VIRGINIA—</b>										
Producing placer mines...	4	34	...	...	2	8	2	26	...	...	Producing lode mines...	2	18	1	3	...	...	...	...		
Nonproducing mines...	...	...	...	...	...	...	...	...	...	...	Nonproducing mines...	1	55	...	...	1	55	...	...		
<b>WASHINGTON—</b>											Producing lode mines...	17	221	6	14	11	207	...	...		
Producing lode mines...	17	221	...	...	6	14	11	207	...	...	Nonproducing mines...	11	50	5	18	6	32	...	...		
Nonproducing mines...	11	50	...	...	5	18	6	32	...	...											

<sup>1</sup> U. S. total is exclusive of 259 enterprises—producing, 242, and nonproducing, 17—employing no wage earners.

<sup>2</sup> Includes Georgia.

LAND TENURE AND ROYALTIES.

Land tenure.—Table 22 shows for 1919, by states, for producing lode-mining and placer-mining enterprises and for nonproducing enterprises, the number of acres of land controlled. The table distinguishes mineral land (that is, land held for its content of gold, silver, copper, lead, or zinc) from timber and other lands, shows the mineral land classified according to

the form of tenure, and gives the number of acres operated. In this table, and in others relating to acreage, the number of acres of mineral land controlled by the mining enterprises is greater by the amount of acreage leased to other operators and by the idle acreage than the number of acres reported operated. "Acres operated" is exclusive of the duplication in "Acres controlled" of acreage reported by both owners and lessees.

TABLE 22.—LAND OPERATED AND CONTROLLED, PRODUCING AND NONPRODUCING ENTERPRISES: 1919.

CLASS OF MINE AND STATE.	Mineral land operated (acres).	LAND CONTROLLED.					CLASS OF MINE AND STATE.	Mineral land operated (acres).	LAND CONTROLLED.					
		Aggregate (acres).	Mineral land.			Timber and other lands (acres).			Aggregate (acres).	Mineral land.			Timber and other lands (acres).	
			Total (acres).	Owmed (acres).	Held under lease (acres).					Total (acres).	Owmed (acres).	Held under lease (acres).		
UNITED STATES.....	909,533	1,282,347	910,801	779,195	131,606	371,546	PLACER MINES—Contd.							
Producing enterprises.....	733,503	1,099,966	734,068	642,743	91,325	365,896	Colorado.....	6,238	6,238	6,238	4,839	1,399	.....	
LODE MINES.....	670,646	1,020,149	671,111	591,524	79,587	349,038	Idaho.....	5,210	5,210	5,210	3,760	1,450	.....	
Arizona.....	64,836	82,164	64,836	51,811	13,075	17,278	Montana.....	5,534	6,985	5,534	5,392	142	1,451	
Arkansas.....	1,028	1,028	1,028	.....	.....	.....	Nevada.....	2,848	2,848	2,848	2,782	66	.....	
California.....	30,665	44,166	30,685	28,086	2,649	13,481	New Mexico.....	59	59	59	.....	.....	.....	
Colorado.....	33,963	36,220	34,049	22,229	11,820	2,171	Oregon.....	9,532	11,212	9,632	9,420	212	1,589	
Georgia.....	1,705	1,705	1,705	.....	.....	.....	Washington.....	80	80	80	80	.....	.....	
Idaho.....	19,262	22,238	19,362	17,715	1,647	2,876	Nonproducing enterprises.....	176,035	182,381	176,733	136,452	40,281	5,648	
Illinois.....	898	898	898	.....	.....	.....	Arizona.....	26,299	26,527	26,299	24,580	1,769	228	
Kansas.....	1,686	1,686	1,686	.....	.....	.....	California.....	26,317	26,677	26,330	23,358	2,972	347	
Michigan.....	66,531	262,895	66,531	65,555	876	196,334	Colorado.....	8,320	8,702	8,403	5,968	2,465	299	
Missouri.....	50,749	50,749	50,749	47,905	2,844	.....	Georgia.....	120	120	120	.....	.....	.....	
Montana.....	19,076	22,614	19,168	13,004	6,164	3,446	Idaho.....	19,693	19,833	19,693	16,863	2,830	140	
Nevada.....	36,590	43,628	36,603	28,048	8,555	7,025	Kansas.....	21,715	22,317	22,317	625	21,691	.....	
New Jersey.....	1,547	11,457	1,547	1,547	.....	9,910	Michigan.....	5,100	5,100	5,100	5,100	.....	.....	
New Mexico.....	23,012	45,797	23,072	19,370	3,702	22,725	Missouri.....	40	40	40	40	.....	.....	
New York.....	10,500	10,500	10,500	600	10,000	.....	Montana.....	6,139	6,639	6,139	4,152	1,967	500	
Oklahoma.....	4,914	4,994	4,994	.....	.....	4,994	New Mexico.....	18,456	18,696	18,456	17,528	928	139	
Oregon.....	4,135	4,135	4,135	3,300	835	.....	New York.....	5,965	6,153	5,965	4,962	963	188	
Pennsylvania.....	113	113	113	.....	.....	113	North Carolina.....	125	125	125	.....	.....	.....	
South Dakota.....	9,642	40,652	9,542	9,527	15	31,110	Oklahoma.....	390	390	390	390	.....	.....	
Tennessee.....	14,519	46,417	14,519	14,249	270	31,898	Oregon.....	360	360	360	.....	.....	.....	
Texas.....	1,417	1,417	1,417	.....	.....	.....	South Dakota.....	3,130	3,130	3,130	2,660	470	.....	
Utah.....	264,360	268,546	264,364	261,283	3,081	4,182	Utah.....	2,181	2,821	2,181	1,181	1,000	640	
Vermont.....	260	260	260	.....	.....	260	Virginia.....	16,378	18,098	16,378	14,742	1,636	1,720	
Washington.....	3,007	3,567	3,007	2,257	750	560	Washington.....	1,846	2,544	1,846	1,846	.....	698	
Wisconsin.....	6,291	12,333	6,291	2,381	3,910	6,042	Wisconsin.....	2,381	3,130	2,381	1,911	470	749	
PLACER MINES.....	62,857	79,817	62,967	51,219	11,738	16,960	Wyoming.....	400	400	400	520	.....	.....	
Arizona.....	3,000	3,000	3,000	3,000	.....	.....								
California.....	30,356	44,185	30,356	21,946	8,410	13,829								

Table 23 presents comparative statistics for 1919 and 1909 relating to the number of acres of mineral land and of timber and other lands controlled by producing enterprises and shows the per cent of increase for each class of land.

TABLE 23.—COMPARATIVE STATISTICS, LAND CONTROLLED, PRODUCING ENTERPRISES: 1919 AND 1909.

INDUSTRY AND STATE.	TOTAL LAND CONTROLLED (ACRES).			MINERAL LAND (ACRES).			TIMBER AND OTHER LANDS (ACRES)		
	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Percent of increase. <sup>1</sup>
UNITED STATES, all industries <sup>2</sup> .....	1,099,966	989,183	11.2	734,068	699,861	4.9	365,896	289,322	26.5
Copper <sup>3</sup> .....	648,703	275,596	135.4	392,894	126,851	209.7	255,819	148,747	72.0
Lead and zinc <sup>3</sup> .....	182,509	125,322	45.8	135,456	103,555	30.8	47,053	21,767	116.2
Gold and silver, lode mines <sup>3</sup> .....	188,937	374,685	-49.6	142,771	276,857	-48.4	46,166	97,828	-62.8
Gold, placer mines <sup>3</sup> .....	79,817	213,578	-62.6	62,967	192,598	-67.3	16,860	20,980	-19.6
COPPER, LEAD AND ZINC, AND GOLD AND SILVER, LODE MINES:									
Arizona.....	82,164	42,290	94.3	64,896	36,980	75.5	17,278	5,310	225.4
Arkansas.....	1,028	970	6.0	1,028	970	.....	.....	.....	.....
California.....	44,166	118,753	-62.8	30,685	106,119	-70.8	13,481	13,633	-1.1
Colorado.....	36,220	38,649	-6.3	34,049	35,391	-3.8	2,171	3,268	-33.4
Idaho.....	22,238	19,780	12.7	19,362	17,003	13.9	2,876	2,727	5.5
Illinois.....	898	710	26.5	898	710	.....	.....	.....	.....
Kansas.....	1,686	1,288	34.0	1,686	1,247	35.2	.....	11	.....
Michigan.....	262,895	160,163	64.1	66,531	67,369	-1.2	196,334	92,784	111.6
Missouri.....	50,749	106,001	-52.1	50,749	85,489	-40.6	.....	20,512	.....
Montana.....	22,614	48,844	-53.7	19,068	19,068	0.6	3,446	29,796	-85.4
Nevada.....	43,628	33,872	28.8	36,603	26,965	35.7	7,025	6,907	1.7
New Jersey.....	11,457	1,653	593.1	1,253	1,253	.....	9,910	400	.....
New Mexico.....	45,797	79,973	-42.7	23,072	20,146	-20.8	22,725	50,827	-55.3
Oklahoma.....	4,994	715	598.5	4,994	715	.....	.....	.....	.....
Oregon.....	4,135	8,509	-51.4	4,135	6,263	-34.8	.....	2,216	.....
South Dakota.....	40,652	30,420	33.6	10,225	6,205	-6.7	31,110	20,195	54.0
Tennessee.....	46,417	19,413	139.1	14,519	8,513	70.6	31,898	10,900	192.6
Texas.....	1,417	713	98.7	1,417	640	121.4	.....	73	.....
Utah.....	268,546	31,202	780.7	264,364	24,217	991.6	4,182	6,985	-40.1
Washington.....	3,567	5,588	-36.2	3,007	4,118	-27.0	560	1,470	-61.9
Wisconsin.....	12,333	10,689	15.6	6,291	10,445	-39.8	6,042	224	.....
GOLD, PLACER MINES:									
Arizona.....	3,000	123	.....	3,000	123	.....	.....	.....	.....
California.....	44,185	123,168	-64.1	30,356	116,251	-73.9	13,829	6,907	100.2
Colorado.....	6,238	7,477	-16.6	6,238	7,477	.....	.....	.....	.....
Idaho.....	5,210	25,978	-79.9	5,210	25,248	-79.4	.....	730	.....
Montana.....	6,985	13,490	-48.2	5,534	13,300	-58.4	1,451	190	663.7
Nevada.....	2,848	1,774	60.5	2,848	1,774	.....	.....	.....	.....
New Mexico.....	59	780	-92.4	59	780	-92.4	.....	.....	.....
Oregon.....	11,212	18,015	-37.8	9,632	12,696	-24.1	1,589	5,319	-70.3
Washington.....	80	854	-90.6	80	854	-90.6	.....	.....	.....

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes statistics for states not shown separately because comparable statistics are not available.

These statistics are given for all metal-mining industries combined, for each industry separately, and for lode and placer mines by selected states. The table shows increases in the acreage controlled by the copper, and lead and zinc mining industries, and considerable decrease in the acreage controlled by the gold and silver lode mining and the gold placer-mining industries, which decreases are in accord with the large decreases shown for these industries in the comparative summary, Table 9.

In Table 24 producing metal-mining enterprises are grouped according to the form of tenure of mineral land—whether held by ownership, under lease, or held partly by ownership and partly under lease. The table also shows the per cent the total owned acreage is of the aggregate of mineral land and also

the per cent which the total under each class of tenure is of the aggregate acreage of mineral land. The statistics are presented by states for mining regions for lode and placer mines separately. For all industries combined, nearly one-half of the enterprises were in the class which operated owned land exclusively. The acreage operated by these enterprises was 83.3 per cent of all mineral land controlled by metal-mining enterprises. A very large part of the land was owned by the operators in all but nine states. These were principally in the Central Region, where Missouri was the only state in which most of the land was owned by the operators, whereas in Kansas and Oklahoma none of the land was owned by the mining enterprises, and less than one-half was owned by operators in the other states of this region.

TABLE 24.—NUMBER OF PRODUCING ENTERPRISES AND ACRES OF MINERAL LAND CONTROLLED, CLASSIFIED ACCORDING TO FORM OF TENURE: 1919.

MINING REGION AND STATE.	ALL CLASSES.				ENTERPRISES OPERATING ONLY OWNED LAND.			ENTERPRISES OPERATING ONLY LAND HELD UNDER LEASE.			ENTERPRISES OPERATING LAND PARTLY OWNED AND PARTLY HELD UNDER LEASE.					
	Number of enterprises.	Acres controlled.				Number.	Acres controlled.		Number.	Acres controlled.		Number.	Acres controlled.			
		Aggregate.	By ownership.	By lease.	Per cent owned is of aggregate.		By ownership.	Per cent of aggregate.		By lease.	Per cent of aggregate.		Total.	By ownership.	By lease.	Per cent of aggregate.
UNITED STATES, all industries.....	11,426	734,068	642,743	91,325	87.6	697	611,361	83.3	653	62,202	8.5	76	60,515	31,392	29,123	8.2
Lode mines.....	11,314	671,111	591,524	79,587	83.1	628	565,892	84.3	616	52,065	7.8	70	53,164	25,642	27,522	7.9
Placer mines.....	112	62,957	51,219	11,738	81.4	69	46,469	72.2	37	10,137	16.1	6	7,351	5,750	1,601	11.7
<b>LODE MINES:</b>																
<b>Western Region—</b>																
Arizona.....	141	64,896	51,811	13,075	79.9	77	49,181	75.8	54	11,002	17.0	10	4,708	2,680	2,073	7.2
California.....	125	30,635	28,036	2,649	91.4	90	27,618	90.0	31	2,597	8.5	4	470	418	52	1.5
Colorado.....	223	34,049	22,229	11,820	65.3	90	18,670	54.8	119	6,499	19.1	18	8,838	3,556	5,224	26.1
Idaho.....	57	19,362	17,715	1,647	91.5	45	17,170	88.7	7	1,157	6.0	5	1,035	545	490	5.3
Montana.....	145	19,168	13,004	6,164	67.8	66	11,630	60.7	74	5,099	26.5	5	2,446	1,374	1,075	12.8
Nevada.....	171	26,803	28,048	8,555	76.6	107	25,691	70.2	58	7,027	19.2	6	3,835	2,357	1,528	10.6
New Mexico.....	43	23,072	19,370	3,702	84.0	18	17,292	74.9	18	1,806	8.2	7	3,834	2,073	1,806	16.8
Oregon.....	11	4,135	3,300	835	79.8	5	2,940	71.1	4	635	15.4	2	560	360	200	13.5
South Dakota.....	5	9,542	9,527	15	99.8	4	9,527	99.8	1	15	0.2					
Texas.....	1	1,417	1,417		100.0	1	1,417	100.0								
Utah.....	83	264,364	261,253	3,081	98.9	72	260,283	98.5	10	2,081	0.8	1	2,000	1,000	1,000	0.8
Washington.....	19	3,007	2,257	750	75.1	11	2,032	67.6	6	630	21.0	2	345	225	120	11.5
<b>Lake Region—</b>																
Michigan.....	21	66,531	65,655	876	98.7	20	62,264	93.6				1	4,267	3,391	876	6.4
<b>Central Region—</b>																
Arkansas.....	11	1,028	842	686	83.3	3	342	33.3	8	690	66.7					
Illinois.....	5	398	368	530	41.0	1	317	35.3	3	356	39.0	1	231	51	180	28.7
Kansas.....	27	1,686		1,686	100.0				27	1,686	100.0					
Missouri.....	86	50,749	47,905	2,844	94.4	8	47,836	94.3	77	2,794	5.5	1	120	70	50	0.2
Oklahoma.....	108	4,994		4,994	100.0				108	4,994	100.0					
Wisconsin.....	22	6,291	2,381	3,910	37.8	2	1,617	25.7	16	2,817	44.8	4	1,857	764	1,093	29.5
<b>Eastern and Southern Regions—</b>																
Georgia.....	1	1,705	320	1,385	18.8							1	1,705	320	1,385	100.0
New Jersey.....	2	1,547	1,547		100.0											
New York.....	1	10,500	500	10,000	4.8	2	1,547	100.0				1	10,500	500	10,000	100.0
Pennsylvania.....	1	113		113	100.0											
Tennessee.....	5	14,519	14,249	270	98.1	4	8,249	56.8				1	6,270	6,000	270	43.2
Vermont.....	2	260	260		100.0	2	260	100.0								
<b>PLACER MINES:</b>																
<b>Western Region—</b>																
Arizona.....	1	3,000	3,000		100.0	1	3,000	100.0								
California.....	60	30,356	21,946	8,410	72.3	37	21,475	70.7	20	7,353	24.2	3	1,528	471	1,057	5.0
Colorado.....	5	6,238	4,839	1,399	77.6	1	200	3.2	3	1,115	17.9	1	4,923	4,639	284	78.9
Idaho.....	11	5,210	3,700	1,450	72.2	8	3,760	72.2	3	1,450	27.8					
Montana.....	9	5,524	5,392	142	97.4	5	4,852	87.7	3	82	1.5	1	600	540	60	10.8
Nevada.....	8	2,848	2,782	66	97.7	4	2,782	97.7	4	66	2.3					
New Mexico.....	1	59		59	100.0				1	59	100.0					
Oregon.....	16	9,632	9,420	212	97.8	12	9,320	96.8	3	12	0.1	1	300	100	200	2.1
Washington.....	1	80	80		100.0	1	80	100.0								

<sup>1</sup> Not including 53 enterprises comprising reduction works and operations on dumps and old tailings in states as follows: California, 6; Colorado, 7; Idaho, 3; Illinois, 1; Kansas, 8; Michigan, 1; Missouri, 1; Montana, 8; Nevada, 7; Oklahoma, 5; Utah, 3; and Wisconsin, 1.

**Royalties.**—The census of mines and quarries, 1919, did not distinguish between royalties or rent paid for mineral land and rents of other kinds. In the metal-mining industries rents of other kinds, such as for buildings, equipment, right of way, and other easements or privileges, and royalties on the use of treatment processes, were important items of expense for some enterprises. For the most part, however, the statistics presented relating to royalties and rents, especially for enterprises operating lands held under lease, include only royalties on production or rents of mineral land. Such royalties and rents, which are compensations for the privilege of mining leased land, are either fixed shares of the product or of the value of the product. Table 25 gives for each industry and by regions for copper and lead and zinc mining sta-

tistics in regard to royalties and rents paid, together with the number of producing enterprises paying them, and the value of products of these enterprises. The enterprises are classified according to the form of tenure of the mineral land operated by them. Nearly one-half of the enterprises operating land held by ownership, and producing 84.6 per cent of the total value of the output, reported 12.9 per cent of the royalties and rents paid. However, the copper-mining enterprises in this class reported over three-fifths of the royalties and rents paid by the entire copper-mining industry and this was principally for the use of treatment processes. On the other hand, 46 per cent of the metal-mining enterprises, reporting only 12.1 per cent of the total value of products, operated leased land entirely and paid 80.2 per cent of the total royalties and rents.

TABLE 25.—VALUE OF PRODUCTS AND ROYALTIES AND RENTS FOR PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO TENURE OF MINERAL LAND: 1919.

INDUSTRY AND MINING REGION.	ALL CLASSES.			ENTERPRISES OPERATING ONLY OWNED LAND.				ENTERPRISES OPERATING ONLY LAND HELD UNDER LEASE.				ENTERPRISES OPERATING LAND PARTLY OWNED AND PARTLY HELD UNDER LEASE.						
	Number of enterprises.	Value of products.	Royalties and rents.	Number.	Value of products.		Royalties and rents.		Number.	Value of products.		Royalties and rents.		Number.	Value of products.		Royalties and rents.	
					Amount.	Per cent of total.	Amount.	Per cent of total.		Amount.	Per cent of total.	Amount.	Per cent of total.		Amount.	Per cent of total.	Amount.	Per cent of total.
UNITED STATES, all Industries <sup>1</sup> .....	1,426	\$315,140,567	\$6,740,129	607	\$206,615,090	84.6	\$866,326	12.9	653	\$86,080,812	12.1	\$5,406,890	80.2	76	\$10,474,658	3.3	\$460,914	6.9
Copper.....	193	179,990,211	536,819	129	174,088,509	96.7	330,758	61.6	54	2,704,796	1.5	157,281	29.3	11	3,196,915	1.8	48,890	9.1
Lead and zinc.....	412	74,100,844	5,236,862	109	39,158,313	52.8	312,348	6.0	286	31,579,989	42.6	4,671,557	89.2	17	3,362,542	4.5	252,957	4.8
Gold and silver, lode mines.....	709	51,680,961	890,549	391	45,460,026	88.0	211,200	24.0	278	3,226,283	6.2	511,299	58.1	42	2,994,642	5.8	158,060	17.9
Gold, placer mines.....	112	9,368,561	85,899	69	7,908,260	84.4	12,019	14.0	37	539,744	5.8	66,803	77.8	6	920,557	9.8	7,077	8.2
COPPER:																		
Western Region.....	167	144,554,642	531,984	104	139,295,601	96.4	330,758	62.2	54	2,704,796	1.9	157,281	29.6	9	2,554,248	1.8	48,996	8.3
Lake Region.....	21	34,270,639	.....	30	34,183,326	99.7	.....	.....	.....	.....	.....	.....	.....	1	87,314	0.3	.....	.....
Central, Eastern, and Southern Regions.....	5	1,164,930	4,835	4	609,574	52.3	.....	.....	.....	.....	.....	.....	.....	1	555,356	47.7	4,835	100.0
LEAD AND ZINC:																		
Western Region.....	149	34,244,249	659,504	91	19,053,036	78.6	94,274	14.3	48	4,334,982	17.9	478,208	72.5	10	856,281	3.5	87,027	13.2
Central Region.....	256	43,803,983	4,366,239	18	14,549,776	33.2	12,487	0.8	237	27,244,287	63.2	4,192,854	96.1	6	2,009,870	4.6	189,888	3.7
Eastern and Southern Regions.....	7	6,062,662	212,129	5	5,555,501	91.8	206,587	96.9	1	720 (*)	.....	500	0.2	1	498,441	8.2	6,042	2.8

<sup>1</sup> Exclusive of statistics for 23 reduction works operated independently of mines and for 30 operations on dumps and old tailings.  
<sup>2</sup> Less than one-tenth of 1 per cent.

**POWER.**

**Power equipment used: 1919.**—Statistics for power equipment used by all metal-mining enterprises in 1919 are given in the table of detailed statistics and are summarized for mining regions in Table 26, which also shows the per cent which the horsepower of each class is of the aggregate horsepower used. Nearly three-fifths of the horsepower of equipment used by all the metal-mining industries in the United States was in prime movers, and of this 54.6 per cent was in reciprocating steam engines and 28.3 per cent in steam turbines, 12.7 per cent in internal-combustion engines,

and 4.5 per cent in water wheels and turbines. The extent of electrification for all industries combined is indicated by the ratio of the horsepower of electric motors of all classes, 603,815, to the horsepower of prime movers, 579,282. In the copper-mining industry the principal source of power was from prime movers, and steam engines and turbines in particular; in the lead and zinc-mining industry purchased electric current was an important source of power, only slightly less so than prime movers; in the gold and silver lode-mining and gold placer-mining industries the principal source of power used was purchased electric current.



MINES AND QUARRIES.

TABLE 26.—POWER USED, PRODUCING AND NONPRODUCING ENTERPRISES: 1919.

INDUSTRY AND REGION.	Aggregate horsepower.	PRIME MOVERS.											EQUIPMENT OPERATED BY PURCHASED POWER.						ELECTRIC MOTORS RUN BY CURRENT GENERATED BY THE ENTERPRISE REPORTING.		
		Total horsepower.	Steam engines (not turbines).			Steam turbines.			Internal-combustion engines.			Water wheels and turbines.			Electric motors.		Other.				
			Number.	Horsepower.		Number.	Horsepower.		Number.	Horsepower.		Number.	Horsepower.		Number.	Horsepower.		Number.			Horsepower.
				Amount.	Per cent of aggregate.		Amount.	Per cent of aggregate.		Amount.	Per cent of aggregate.		Amount.	Per cent of aggregate.		Amount.	Per cent of aggregate.				
UNITED STATES, all industries.....	981,229	579,282	1,579	315,389	32.2	106	163,723	16.7	1,292	73,325	7.5	242	25,845	2.6	9,723	399,645	40.7	2,302	0.2	4,441	204,170
Producing enterprises.....	938,444	557,828	1,437	308,392	32.9	104	163,393	17.4	948	63,610	6.8	200	22,433	2.4	9,183	378,731	40.4	1,885	0.2	4,393	208,401
COFFEE.....	523,591	386,458	842	245,398	46.9	79	123,223	28.5	129	16,327	3.1	10	1,510	0.3	3,647	135,968	26.0	1,165	0.2	3,252	161,024
Western Region.....	347,232	228,080	509	115,912	33.4	68	89,993	25.9	125	16,165	4.7	8	1,010	0.3	3,199	122,937	35.4	1,165	0.3	2,347	104,706
Lake Region.....	166,589	161,353	326	127,961	75.5	11	33,230	19.6	4	162	0.1				261	8,236	4.9			888	56,668
Central, Eastern, and Southern Regions.....	6,770	2,025	7	1,525	22.5							3	500	7.4	187	4,745	70.1			17	230
LEAD AND ZINC.....	229,541	117,527	411	42,821	18.7	21	35,420	15.4	433	35,415	15.4	30	3,871	1.7	2,389	111,874	48.7	140	0.1	625	22,884
Western Region.....	66,985	12,546	38	4,768	7.1	3	1,306	1.9	108	3,457	5.2	21	2,986	4.5	1,223	54,339	81.2	50	0.1	114	3,377
Central Region.....	136,049	92,901	366	34,976	25.7	14	25,115	18.5	324	31,928	23.5	9	885	0.7	902	45,068	31.6	90	0.1	345	13,680
Eastern and Southern Regions.....	26,557	12,080	7	3,077	11.6	4	9,000	33.9	1	3	( <sup>1</sup> )				257	14,477	54.5			166	5,868
GOLD AND SILVER, LODE MINES.....	149,680	50,437	182	20,133	13.5	4	4,750	3.2	370	11,149	7.4	135	14,405	9.6	2,523	98,663	65.9	580	0.4	494	18,802
Western Region.....	149,680	50,437	182	20,133	13.5	4	4,750	3.2	370	11,149	7.4	135	14,405	9.6	2,523	98,663	65.9	580	0.4	494	18,802
GOLD, FLACER MINES.....	35,632	3,406	2	40	0.1				16	719	2.0	25	2,647	7.4	624	32,236	90.4			22	601
Western Region.....	35,632	3,406	2	40	0.1				16	719	2.0	25	2,647	7.4	624	32,236	90.4			22	601
Nonproducing enterprises.....	42,785	21,454	142	7,997	18.7	2	330	0.8	344	9,715	22.7	43	3,412	8.0	540	20,914	48.9	417	1.0	48	769
Western Region.....	39,799	19,653	133	6,961	17.5				335	9,355	23.5	41	3,337	8.4	512	19,829	49.8	317	0.8	48	769
Lake Region.....	1,168	980	4	650	55.7	2	330	28.3							13	158	16.1				
Central Region.....	1,396	806	3	286	20.5				7	320	22.9				11	690	49.4	100	7.2		
Eastern and Southern Regions.....	422	215	2	100	23.7				2	40	9.5	1	76	17.8	3	207	49.1				

<sup>1</sup> Less than one-tenth of 1 per cent.

Comparative statistics for power: 1919 and 1909.—Table 27 presents by industries and mining regions the number and horsepower of steam engines and other prime movers, and of electric motors used by producing metal-mining enterprises in 1919 and 1909, and gives the per cent increase for 1919 as compared with 1909. The table shows a considerable increase in aggregate horsepower of equipment used; a slight decrease in

the total horsepower of prime movers used; and very large increase in the number and horsepower of electric motors used, including motors operated by purchased current and motors run by current generated by the enterprises reporting them. The statistics show great advance during the decade in the use of electrically driven equipment, and a marked decrease in the number and horsepower of water wheels and turbines.

TABLE 27.—COMPARATIVE STATISTICS, POWER USED, PRODUCING ENTERPRISES: 1919 AND 1909.

INDUSTRY AND MINING REGION.	Census year.	Aggregate horsepower.	Total horsepower.	PRIME MOVERS.						EQUIPMENT OPERATED BY PURCHASED POWER.			ELECTRIC MOTORS RUN BY CURRENT GENERATED BY THE ENTERPRISE REPORTING.	
				Steam engines.		Internal-combustion engines.		Water wheels and turbines.		Electric motors.		Other.		
				Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.	Horsepower.		
UNITED STATES, all industries.....	1919	938,444	557,828	1,541	471,785	948	63,610	200	22,433	9,183	378,731	1,885	4,393	203,401
1909	715,267	575,956	3,931	483,021	714	26,008	722	67,927	3,520	139,311	1,885	1,471	53,999	
Per cent of increase <sup>1</sup> .....		31.2	-3.1	-80.8	-2.3	32.8	154.4	-72.3	-67.0	204.1	171.9		198.6	276.7
COFFEE.....	1919	523,591	386,458	921	368,621	129	16,327	10	1,510	3,647	135,968	1,165	3,252	161,024
1909	376,464	324,178	699	303,848	71	2,325	15	18,005	819	52,286	586	586	25,888	
Per cent of increase <sup>1</sup> .....		39.1	19.2	31.8					-91.6	345.3	160.0		505.7	522.0
LEAD AND ZINC.....	1919	229,541	117,527	432	78,241	433	35,415	30	3,871	2,389	111,874	140	625	22,884
1909	110,559	107,276	2,158	94,230	214	12,987	3	69	59	3,283	361	361	12,048	
Per cent of increase <sup>1</sup> .....		107.6	9.6	-80.0	-17.0	102.3	172.7			3,307.7	73.1		89.9	
GOLD AND SILVER, LODE MINES.....	1919	149,680	50,437	186	24,883	370	11,149	135	14,405	2,523	98,663	580	494	18,802
1909	200,966	136,094	1,003	82,295	394	9,193	587	44,606	1,662	64,872	538	538	14,999	
Per cent of increase <sup>1</sup> .....		-25.5	-62.9	-81.5	-69.8	-6.1	21.3	-77.0	-67.7	51.8	52.1		-3.2	26.9
GOLD, FLACER MINES.....	1919	35,632	3,406	2	40	16	719	25	2,647	624	32,236		22	601
1909	27,278	8,408	71	2,658	35	503	503	117	5,247	480	18,870		36	1,123
Per cent of increase <sup>1</sup> .....		30.6	-59.5		-98.5		42.9	-78.6	-49.6	30.0	70.8			-43.3

TABLE 27.—COMPARATIVE STATISTICS, POWER USED, PRODUCING ENTERPRISES: 1919 AND 1909—Continued.

INDUSTRY AND MINING REGION.	Census year.	Aggregate horsepower.	PRIME MOVERS.						EQUIPMENT OPERATED BY PURCHASED POWER.			ELECTRIC MOTORS RUN BY CURRENT GENERATED BY THE ENTERPRISE REPORTING.		
			Total horsepower.	Steam engines.		Internal-combustion engines.		Water wheels and turbines.		Electric motors.		Other.	Number.	Horse-power.
				Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.			
<b>COPPER:</b>														
Western Region.....	1919	247,282	223,080	577	205,905	125	16,165	8	1,010	3,199	122,987	1,185	2,347	104,706
	1909	229,500	171,498	336	155,218	70	2,275	14	14,005	789	51,102	.....	418	17,422
Per cent of increase <sup>1</sup> .....		58.0	30.1	49.5	32.7	.....	610.5	.....	-92.8	306.4	140.7	.....	468.3	501.0
Lake Region.....	1919	169,589	161,353	337	161,191	4	162	.....	.....	261	8,236	.....	888	56,088
	1909	149,749	148,565	261	144,515	1	50	.....	1	30	1,184	.....	72	6,908
Per cent of increase <sup>1</sup> .....		13.2	8.6	28.1	11.5	.....	.....	.....	.....	.....	595.6	.....	.....	711.9
Central, Eastern, and Southern Regions.....	1919	6,770	2,025	7	1,525	.....	.....	.....	.....	187	4,745	.....	17	290
	1909	4,115	4,115	52	4,115	.....	.....	.....	.....	.....	.....	.....	51	1,558
Per cent of increase <sup>1</sup> .....		64.5	-80.8	.....	-82.9	.....	.....	.....	.....	.....	.....	.....	.....	-85.2
<b>LEAD AND ZINC:</b>														
Western Region.....	1919	66,985	12,546	41	6,073	108	3,487	21	2,986	1,230	54,339	50	114	3,377
	1909	847	827	9	715	4	112	.....	.....	1	20	.....	2	90
Per cent of increase <sup>1</sup> .....		7,802.6	1,417.0	.....	749.4	.....	3,013.4	.....	.....	.....	.....	.....	.....	.....
Central Region.....	1919	136,049	92,901	380	60,091	324	31,925	9	885	902	43,068	90	345	13,639
	1909	106,845	108,582	2,122	90,638	210	12,875	3	69	58	3,263	.....	312	9,543
Per cent of increase <sup>1</sup> .....		27.3	-10.3	-82.1	-33.7	54.3	148.0	.....	.....	.....	1,219.6	.....	10.6	42.9
Eastern and Southern Regions.....	1919	26,557	12,080	11	12,077	1	3	.....	.....	257	14,477	.....	166	5,868
	1909	2,867	2,867	27	2,867	.....	.....	.....	.....	.....	.....	.....	47	2,415
Per cent of increase <sup>1</sup> .....		826.3	321.3	.....	321.2	.....	.....	.....	.....	.....	.....	.....	.....	143.0
<b>GOLD AND SILVER, LODE MINES:</b>														
Western Region.....	1919	149,500	50,267	183	24,783	369	11,069	135	14,405	2,523	98,663	580	493	18,886
	1909	199,583	134,711	974	81,312	1,94	9,198	584	44,206	1,662	64,872	.....	536	14,687
Per cent of increase <sup>1</sup> .....		-25.1	-62.7	-81.2	-69.5	-6.3	20.4	-76.9	-67.4	51.8	52.1	.....	-8.0	28.6
Eastern and Southern Regions.....	1919	180	180	3	100	1	80	.....	.....	.....	.....	.....	1	6
	1909	1,383	1,383	29	983	.....	.....	.....	.....	.....	.....	.....	2	205
Per cent of increase <sup>1</sup> .....		-87.0	-87.0	.....	-89.8	.....	.....	.....	.....	.....	.....	.....	.....	-97.1
<b>GOLD, PLACER MINES:</b>														
Western Region.....	1919	35,632	3,406	2	40	16	719	25	2,647	624	32,226	.....	22	601
	1909	25,963	6,993	58	2,143	35	503	108	4,347	490	18,870	.....	34	1,126
Per cent of increase <sup>1</sup> .....		37.8	-51.3	.....	-83.1	.....	42.9	-76.9	-59.1	30.0	70.8	.....	.....	-46.6

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

**METHOD OF OPERATION.**

Classes of placer mines according to mining method.—Table 28 presents, for the United States and California, the leading state, the principal statistics for placer-mining enterprises classified according to method of operation. The table also gives the per cent of total

for the several items for each method of operation. Except in number of enterprises, dredging operations far outranked other kinds of placer mining in 1919. Placer mining by sluicing, drifting, and hydraulicking has declined to insignificance in the United States during recent decades.

TABLE 28.—STATISTICS FOR PLACER MINES, CLASSIFIED ACCORDING TO METHOD OF OPERATION, PRODUCING ENTERPRISES: 1919.

	PLACER MINES, OPERATED BY—								
	All methods.	Sluicing.		Drifting.		Hydraulicking.		Dredging.	
		Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.
<b>UNITED STATES.</b>									
Number of enterprises.....	112	27	24.1	21	18.7	37	33.0	27	24.1
Wage earners (average number).....	1,380	29	2.1	70	5.1	93	6.7	1,188	86.1
Wages.....	\$1,914,072	\$39,422	2.1	\$91,490	4.8	\$103,412	5.4	\$1,679,758	87.3
Cost of supplies and materials.....	\$2,244,728	\$15,866	0.7	\$60,125	2.7	\$41,209	1.8	\$2,127,528	94.8
Cost of fuel.....	\$20,459	\$1,022	5.0	\$2,252	11.0	\$281	1.4	\$16,904	82.6
Cost of purchased power.....	\$1,123,874	\$100	( <sup>1</sup> )	\$2,068	0.2	\$412	( <sup>1</sup> )	\$1,121,304	99.8
Value of products.....	\$9,368,561	\$77,755	0.8	\$42,879	0.5	\$153,830	1.6	\$9,094,097	97.1
<b>CALIFORNIA.</b>									
Number of enterprises.....	60	6	10.0	15	25.0	23	38.3	16	26.7
Wage earners (average number).....	1,102	2	0.2	66	6.0	63	5.7	971	88.1
Wages.....	\$1,475,406	\$1,610	0.1	\$84,380	5.7	\$70,633	4.8	\$1,318,733	89.4
Cost of supplies and materials.....	\$1,941,920	\$548	( <sup>1</sup> )	\$58,875	3.0	\$20,831	1.1	\$1,861,666	95.9
Cost of fuel.....	\$5,571	.....	.....	\$2,252	40.4	\$149	2.7	\$3,170	56.9
Cost of purchased power.....	\$946,936	.....	.....	\$614	0.1	\$412	( <sup>1</sup> )	\$945,910	99.9
Value of products.....	\$7,937,654	\$8,592	0.1	\$25,999	0.3	\$99,219	1.2	\$7,808,844	98.3

<sup>1</sup> Less than one-tenth of 1 per cent.

Classes of lode mines according to treatment of ores.—Table 29 presents for the metalliferous lode-mining industry as a whole and for each industry separately the principal statistics for enterprises operated without beneficiating plants and for enterprises operated with reduction works of different kinds, and gives the per cent distribution for each class.

The table shows for all industries combined that enterprises operated without beneficiating plants or

reduction works were relatively unimportant although numerically predominant. In the copper and gold and silver mining industries such enterprises numbered more than two-thirds of the total but produced only a little more than one-sixth and one-fourth, respectively, of the total value of products.

In the lead and zinc mining industry only one-third of the enterprises were without reduction works and this class accounted for about one-tenth of the value of products of the industry.

TABLE 29.—STATISTICS FOR LODE MINES, CLASSIFIED ACCORDING TO TREATMENT OF ORES, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND ENTERPRISE, CLASSIFIED ACCORDING TO TREATMENT OF ORE.	Number of enterprises.	Per cent distribution.	WAGE EARNERS.		WAGES.		COST OF SUPPLIES AND MATERIALS.		COST OF FUEL.		COST OF PURCHASED POWER.		VALUE OF PRODUCTS.	
			Average number.	Per cent distribution.	Amount.	Per cent distribution.	Amount.	Per cent distribution.	Amount.	Per cent distribution.	Amount.	Per cent distribution.	Amount.	Per cent distribution.
ALL INDUSTRIES, LODE MINES.....	1,867	100.0	81,037	100.0	\$120,916,170	100.0	\$69,230,212	100.0	\$15,716,858	100.0	\$8,483,572	100.0	\$315,069,764	100.0
Enterprises without beneficiating plants.....	801	58.6	14,408	17.8	23,881,380	19.8	8,980,997	13.0	1,916,160	12.2	1,196,960	14.1	54,064,745	17.3
Enterprises with beneficiating plants <sup>1</sup> .....	566	41.4	66,629	82.2	97,034,790	80.2	60,249,215	87.0	13,800,698	87.8	7,286,612	85.9	261,005,019	82.7
COFFEE.....	195	100.0	43,717	100.0	66,390,194	100.0	35,808,425	100.0	11,310,485	100.0	3,555,530	100.0	181,268,087	100.0
Mines without reduction works.....	135	69.2	7,507	17.2	12,661,795	19.1	4,669,619	13.0	1,296,863	11.5	560,595	15.8	31,149,428	17.3
Mines with concentrating plants <sup>2</sup> .....	45	23.1	20,426	46.7	31,595,817	47.6	22,475,561	62.8	6,672,194	59.0	1,756,851	49.4	101,704,235	56.1
Mines with concentrating plants operated in connection with smelters.....	8	4.1	14,568	33.4	20,433,714	30.8	7,672,914	21.4	3,241,851	28.7	1,113,487	31.3	44,782,175	24.7
Mines without concentrating plants and operated in connection with smelters.....	7	3.6	1,196	2.7	1,707,868	2.6	995,331	2.8	99,577	0.9	124,597	3.5	3,022,249	2.0
LEAD AND ZINC.....	432	100.0	21,884	100.0	30,708,319	100.0	15,717,599	100.0	2,788,249	100.0	2,591,906	100.0	75,579,347	100.0
Mines without reduction works.....	149	34.5	2,314	10.6	3,675,450	12.0	1,282,344	8.2	182,037	6.5	194,279	7.5	3,272,568	10.9
Mines with concentrating plants.....	260	60.2	18,562	84.9	25,475,068	83.0	13,136,232	83.6	2,517,026	90.4	2,151,948	83.0	62,152,532	82.2
Mines, with or without concentrating plants, operated in connection with smelters.....	3	0.7	649	3.0	1,040,368	3.4	384,317	2.4	55,244	2.0	82,930	3.2	3,675,744	4.9
Reduction mills operated independently of mines.....	10	2.3	287	1.3	452,428	1.5	890,958	5.6	26,664	1.0	135,186	5.2	1,346,790	1.8
Operations on dumps and old tailings.....	10	2.3	52	0.2	64,985	0.2	33,748	0.2	2,278	0.1	27,563	1.1	181,713	0.2
GOLD AND SILVER.....	740	100.0	15,436	100.0	23,317,657	100.0	17,709,188	100.0	1,623,124	100.0	2,336,136	100.0	58,882,330	100.0
Mines without reduction works.....	517	69.9	4,587	29.7	7,544,135	31.7	3,039,034	17.2	437,280	26.9	444,096	19.0	15,242,749	25.9
Mines with amalgamating or cyaniding plants, or both, but without concentrating plants.....	79	10.7	3,868	25.1	5,912,356	24.8	3,809,529	21.5	466,763	28.8	525,604	22.5	16,126,006	27.4
Mines with concentrating plants producing concentrates only.....	55	7.4	2,339	15.2	3,651,365	15.3	1,664,608	9.4	205,360	12.7	365,252	15.6	6,296,210	10.7
Mines with concentrating and amalgamating or cyaniding plants, or both.....	58	7.8	4,249	27.5	6,180,625	25.9	3,624,618	20.5	369,424	22.8	863,505	37.0	14,015,966	23.8
Reduction mills operated independently of mines.....	12	1.6	298	1.9	395,869	1.7	5,478,684	30.9	132,450	8.2	118,414	5.1	6,710,968	11.4
Operations on dumps and old tailings.....	19	2.6	95	0.6	133,367	0.6	92,715	0.5	11,867	0.7	19,275	0.8	440,421	0.7

<sup>1</sup> Includes reduction works operated independently of mines, and operations on dumps and old tailings.  
<sup>2</sup> Includes, to avoid disclosure, 1 reduction mill and 1 operation on a dump or old tailing.

FUEL USED.

Table 30 shows for all enterprises in the metal-mining industries for the United States as a whole, and by states for mining regions, for each of the industries, the kinds and quantity of fuel used in mining opera-

tions. In the United States for all industries combined, the principal fuel was bituminous coal. In the Western Region, particularly in copper mining, fuel oils were important; and in the Central Region in the lead and zinc industry natural gas was an important fuel.

TABLE 30.—QUANTITY OF FUEL USED, BY KINDS, ALL ENTERPRISES: 1919.

INDUSTRY, REGION, AND STATE.	COAL.						INDUSTRY, REGION, AND STATE.	COAL.						
	Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).	Coke (tons, 2,000 pounds).	Wood (cords).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).		Natural gas (1,000 cubic feet).	Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).	Coke (tons, 2,000 pounds).	Wood (cords).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).
UNITED STATES.....	48,534	2,069,595	10,398	43,722	1,551,980	40,280	1,446,846							
Producing enterprises.....	48,532	2,069,968	10,386	28,262	1,526,000	29,505	1,423,554							
Copper.....	14,889	1,364,172	9,744	5,236	1,822,100	6,932	33,456							
Lead and zinc.....	33,536	608,278	272	3,870	72,517	6,261	1,390,098							
Gold and silver, lode mines.....	45	191,536	369	17,755	130,269	15,821								
Gold, placer mines.....	72	992	1	1,691	114	491								
<b>COPPER:</b>														
Western Region—														
Arizona.....		33,429	174	20	1,258,708	2,473								
California.....	80	1,673	556	5,080	28,724	458								
Colorado.....		10												
Idaho.....		174		25	165	343								
Montana, Oregon, and Washington.....		127,220	4,743	111	100	1,125								
Utah, Nevada, and New Mexico.....		359,725	1,484		36,037	1,467								
Lake Region—														
Michigan.....	14,800	782,742	2,758		2,476	1,066	33,456							
Central, Eastern, and Southern Regions—														
Missouri, Tennessee, and Vermont.....		9,199	20		800									
<b>LEAD AND ZINC:</b>														
Western Region—														
Arizona.....		2			85	982								
California.....		94			1,639	185								
Colorado.....	34	6,274			120	4								
Idaho.....		12,432	84	1,516	561	290								
Montana, Nevada, New Mexico, South Dakota, Utah, and Washington.....		39,138	188	572	8,841	1,859								
Central Region—														
Arkansas.....		6		246	195									
Illinois.....		786												
Kansas.....		30,080		687	12,133		118,819							
Missouri.....		309,667		467	7,219	679	21,898							
Oklahoma.....		90,022		40	21,627	2,064	1,049,351							
Wisconsin.....		5,050		42	1,402	190								
Eastern and Southern Regions—														
New Jersey, New York, Pennsylvania, and Tennessee.....	33,492	9,737			18,695	8								
<b>GOLD AND SILVER, LODE MINES:</b>														
Western Region—														
Arizona.....		297			1,506		10,657							2,763
California.....	37	85	3		1,337		43,985							4,194
Colorado.....	8	107,748	110		102		2,395							288
Idaho.....		383			1,918		58							58
Montana.....		7,600	5		5,881		441							442
Nevada.....		1,802			2,289		49,306							5,608
New Mexico.....		1,164			87		8,520							494
Utah.....		31,008	15		777		978							777
Washington.....					1,081		605							605
Oregon, South Dakota, and Texas.....		41,444	236		4,162		3,173							597
<b>GOLD, PLACER MINES:</b>														
Western Region—														
California.....	2	10	1		502		80							186
Colorado.....	70	350			717		34							2
Nevada.....		25					25							25
All other.....		607			472		278							278
Nonproducing enterprises	2	20,627	12		15,470		26,980							10,775
Western Region—														
California, Oregon, and Washington.....	2	77	2		4,147		288							525
Idaho, Montana, and Wyoming.....		5,187	6		4,712		863							845
Arizona, Nevada, and Utah.....		1,873			1,255		25,206							3,704
Colorado, South Dakota, and New Mexico.....		6,493			3,356		465							354
Lake Region—														
Michigan.....		5,643	4				57							57
Central Region—														
Kansas, Missouri, Oklahoma, and Wisconsin.....		794					156							23,292
Eastern and Southern Regions—														
Georgia, New York, North Carolina, and Virginia.....		560			2,000		158							44

<sup>1</sup> Includes Georgia.

<sup>2</sup> Includes Arizona, Idaho, Montana, New Mexico, Oregon, and Washington.

GENERAL TABLE.

Table 31 presents in detail for 1919 the statistics relating to the metal-mining industries in the United States as a whole, for each industry separately, for each of the industries by mining regions and by states in so far as they can be shown separately without the disclosure of individual operations. It shows separately the statistics for the enterprises and mines which were productive in 1919, and statis-

tics for those enterprises in which all operations were confined to development work.

The table gives the number of enterprises and mines; the acreage of mineral land, classified according to form of tenure, and of other land; persons engaged in the industry by classes; capital invested; the principal expenses of operation and development; the value of products; and statistics with regard to power equipment used.

TABLE 31.—DETAILED STATISTICS FOR THE GOLD, SILVER,

INDUSTRY, REGION, AND STATE.	Number of enterprises.	Number of mines.	Number of enterprises operating benefiting plants.	LAND CONTROLLED (ACRES).				PERSONS ENGAGED IN INDUSTRY.								
				Mineral land.			Timber and other lands.	Aggregate.	Proprietors and officials.					Clerks and other subordinate salaried employees.		
				Operated.	Owned.	Leased.			Total.	Proprietors and firm members.		Salaried officers.	Superintendents and managers.	Technical employees.	Male.	Female.
										Total.	Performing manual labor.					
<b>UNITED STATES, all industries.</b>	<b>1,979</b>	<b>2,142</b>	<b>512</b>	<b>909,538</b>	<b>779,195</b>	<b>121,006</b>	<b>371,546</b>	<b>94,876</b>	<b>5,701</b>	<b>1,482</b>	<b>337</b>	<b>826</b>	<b>2,089</b>	<b>1,304</b>	<b>2,553</b>	<b>514</b>
<b>Producing enterprises.....</b>	<b>1,479</b>	<b>1,630</b>	<b>512</b>	<b>733,503</b>	<b>642,743</b>	<b>91,225</b>	<b>365,898</b>	<b>90,211</b>	<b>4,900</b>	<b>1,349</b>	<b>310</b>	<b>625</b>	<b>1,709</b>	<b>1,217</b>	<b>2,421</b>	<b>463</b>
Copper.....	195	226	57	392,811	375,339	14,045	255,819	46,999	1,601	103	62	195	596	717	1,492	188
Lead and zinc.....	423	473	262	135,282	99,328	36,118	47,063	24,020	1,374	412	186	166	547	249	593	179
Gold and silver, lode mines..	740	799	191	142,573	112,347	29,694	46,106	17,531	1,693	712	485	226	505	240	319	83
Gold, placer mines <sup>1</sup> .....	112	122	2	62,857	51,219	11,738	16,960	1,651	223	122	77	38	61	11	26	13
<b>COPPER:</b>																
<b>Western Region—</b>																
Arizona.....	75	89	15	50,126	41,500	8,626	17,278	15,624	760	37	22	76	204	383	558	79
California.....	15	16	7	7,804	7,464	340	5,072	1,140	55	7	3	7	21	20	27	3
Colorado.....	5	5	.....	709	638	71	44	45	9	3	3	1	4	1	.....	1
Idaho.....	8	8	1	1,560	1,296	265	25	114	23	11	.....	3	8	1	3	1
Montana, Oregon, and Washington.	30	32	7	7,522	6,059	1,523	2,216	9,119	224	24	15	18	94	98	260	17
Utah, Nevada, and New Mexico.	35	40	6	250,827	248,836	2,064	28,210	7,442	224	21	19	22	61	120	255	39
<b>Lake Region—</b>																
Michigan.....	22	28	10	66,531	65,655	876	196,334	12,917	271	.....	.....	56	133	82	365	46
<b>Central, Eastern, and Southern Regions—</b>																
Missouri, Tennessee, and Vermont.	5	8	5	7,662	7,392	270	6,640	588	25	.....	.....	2	11	12	16	2
<b>LEAD AND ZINC:</b>																
<b>Western Region—</b>																
Arizona.....	15	16	3	4,575	2,383	2,192	.....	129	24	13	8	3	8	.....	2	2
California.....	17	18	3	3,693	3,173	490	5	141	22	11	7	4	6	1	3	1
Colorado.....	27	37	7	7,596	5,442	2,164	901	1,094	95	32	15	13	26	24	66	7
Idaho.....	20	21	11	10,754	10,414	440	2,181	1,976	95	20	3	11	35	25	49	12
Montana, Nevada, New Mexico, South Dakota, Utah, and Washington.	72	73	10	25,631	17,766	6,069	2,756	3,979	211	36	26	26	85	64	99	22
<b>Central Region—</b>																
Arkansas.....	11	11	11	1,028	342	686	.....	45	16	12	3	2	2	.....	1	.....
Illinois.....	6	6	5	898	368	530	.....	262	15	2	.....	1	.....	3	3	5
Kansas.....	30	30	27	1,686	.....	1,686	.....	1,234	68	10	.....	27	27	4	20	5
Missouri.....	98	96	53	49,827	46,993	2,844	.....	5,329	381	193	106	20	134	34	116	39
Oklahoma.....	111	122	105	4,914	.....	4,994	.....	5,685	267	68	2	46	133	20	98	17
Wisconsin.....	23	34	22	6,291	2,381	3,910	6,042	1,214	87	14	13	10	50	13	35	14
<b>Eastern and Southern Regions—</b>																
New Jersey, New York, Pennsylvania, and Tennessee.	7	8	5	20,189	10,076	10,113	35,168	2,992	93	1	.....	3	31	58	112	54
<b>GOLD AND SILVER, LODGE MINES:</b>																
<b>Western Region—</b>																
Arizona.....	51	51	14	10,175	7,928	2,247	.....	754	89	50	38	11	21	7	16	7
California.....	99	109	68	19,198	17,899	1,319	8,404	3,167	250	111	62	33	67	39	27	9
Colorado.....	198	234	27	25,658	16,149	9,585	1,226	4,077	485	220	144	66	153	46	77	20
Idaho.....	32	32	7	6,948	6,006	942	670	428	61	32	17	9	15	5	13	5
Montana.....	116	121	12	14,286	9,461	4,917	1,210	1,339	207	146	117	10	36	15	18	7
Nevada.....	148	148	38	23,615	17,849	5,776	1,075	2,515	337	112	89	66	106	53	83	11
New Mexico.....	23	25	7	5,018	3,035	1,983	200	453	47	21	7	1	15	10	13	.....
Utah.....	49	50	6	22,814	22,674	140	2,111	2,370	145	11	4	31	69	34	45	13
Washington.....	10	10	1	767	577	190	166	166	14	2	2	4	5	3	2	1
Oregon, South Dakota, and Texas. <sup>2</sup>	14	19	11	14,094	12,269	1,825	31,110	2,262	58	7	5	5	18	28	25	10
<b>GOLD, PLACER MINES:</b>																
<b>Western Region—</b>																
California.....	60	78	2	30,356	21,946	8,410	13,829	1,270	137	55	32	29	45	8	20	11
Colorado.....	5	7	.....	6,228	4,839	1,399	.....	122	10	3	3	2	5	.....	1	1
Nevada.....	8	8	.....	2,848	2,782	66	.....	32	13	13	12	.....	.....	.....	.....	.....
All other.....	39	39	.....	23,415	21,652	1,863	3,031	227	72	51	30	7	11	3	5	1
<b>Nonproducing enterprises.....</b>	<b>500</b>	<b>512</b>	<b>.....</b>	<b>176,035</b>	<b>126,452</b>	<b>49,381</b>	<b>5,648</b>	<b>4,665</b>	<b>801</b>	<b>123</b>	<b>17</b>	<b>201</b>	<b>380</b>	<b>87</b>	<b>122</b>	<b>51</b>
<b>Western Region—</b>																
California, Oregon, and Washington.	62	69	.....	31,828	27,929	3,912	1,096	512	111	39	5	13	49	10	12	3
Idaho, Montana, and Wyoming.	87	87	.....	26,512	21,535	4,977	640	756	122	12	2	24	74	12	11	6
Arizona, Nevada, and Utah.	258	259	.....	71,133	66,800	4,333	2,087	2,289	396	38	5	136	188	34	63	29
Colorado, New Mexico, and South Dakota.	79	83	.....	16,466	12,101	4,448	1,127	709	135	32	5	25	55	23	22	6
<b>Lake Region—</b>																
Michigan.....	3	3	.....	5,100	5,100	.....	.....	197	9	.....	.....	2	4	3	3	4
<b>Central Region—</b>																
Kansas, Missouri, Oklahoma, and Wisconsin.	7	7	.....	22,515	626	22,491	.....	78	18	10	.....	1	6	1	4	2
<b>Eastern and Southern Regions—</b>																
Georgia, New York, North Carolina, and Virginia.	4	4	.....	2,481	2,361	120	698	124	10	2	.....	.....	4	4	7	1

<sup>1</sup> Includes mines of platinum and related metals.  
<sup>2</sup> Includes 1 enterprise in Georgia.

COPPER, LEAD, AND ZINC MINING INDUSTRIES: 1919.

PERSONS ENGAGED IN INDUSTRY—continued.																				
Wage earners.				Wage earners, Dec. 15, or nearest representative day.																
Average number.	Number, 15th day of—		Total.		Foremen, shift bosses, etc.		Enginemen, firemen, hoistmen, electricians, mechanics, etc.		Miners and drillmen, including their helpers.		Timbermen, trackmen, trammers, and men engaged in hauling, etc.		Muckers, loaders, and others not classified.		In mills and beneficiating plants (above ground).	Under 16 years of age (above ground).	Females (above ground).			
	Maximum month.	Minimum month.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.						
86,108	Ja	101,766	Je	76,642	38,770	57,389	1,750	2,425	11,703	2,223	1,827	23,200	1,798	15,118	8,504	14,253	12,188	9	212	1
82,417	Ja	99,301	Je	74,794	36,965	53,968	1,595	2,199	10,919	2,131	1,634	21,352	1,642	14,682	7,997	12,604	12,188	9	153	2
43,717	Ja	58,025	Je	37,885	20,105	28,704	807	1,127	6,167	1,254	1,185	9,455	1,005	8,115	4,352	5,748	6,589	4	74	3
21,634	Ja	26,124	Je	19,949	9,471	15,497	249	373	2,576	342	109	6,857	304	4,351	1,477	4,544	4,634	4	18	4
15,436	Au	16,448	Ja	14,773	5,830	11,492	312	426	1,713	515	208	4,950	226	2,202	1,229	3,310	1,941	1	49	5
1,230	Jy	1,429	Ja	1,574	1,459	75	104	4	463	.....	122	60	37	4	7	.....	.....	.....	.....	6
14,287	Ja	18,079	Ap	11,840	6,702	9,028	215	297	2,158	514	806	3,151	201	2,424	1,864	2,632	1,458	.....	3	7
1,055	Ja	1,255	De	955	509	579	12	21	144	20	11	218	31	92	147	218	164	1	.....	8
35	Mh	43	De	25	3	30	1	3	2	2	.....	17	.....	3	5	.....	.....	.....	.....	9
87	Je	122	De	40	60	82	2	6	8	6	.....	46	.....	16	3	.....	.....	.....	.....	10
2,590	Ja	12,661	Se	7,624	2,126	6,648	113	359	478	279	12	3,206	20	2,455	614	247	902	.....	4	11
6,924	Ja	10,100	Au	5,929	5,079	1,910	296	110	1,205	224	350	606	724	268	516	702	1,826	1	14	12
12,285	Fe	15,177	Je	10,040	5,400	7,036	154	298	1,990	182	.....	2,004	6	2,710	1,168	1,842	2,082	2	49	13
545	Ja	752	Au	378	216	491	12	33	85	27	.....	205	20	134	27	92	72	.....	.....	14
101	Ja	152	Jy	82	34	127	2	9	12	1	.....	45	.....	25	7	47	10	.....	.....	15
115	Ja	137	Jy	92	61	81	5	8	15	2	.....	48	.....	15	4	13	23	.....	.....	16
996	Ja	1,515	My	521	384	824	17	33	127	49	3	377	19	168	40	197	178	.....	3	17
1,820	De	2,444	Se	877	1,064	1,757	48	55	209	79	16	595	13	367	262	661	506	.....	3	18
3,647	Ja	4,268	Jy	3,353	961	3,024	30	96	305	55	6	1,631	25	881	159	361	456	.....	2	19
23	Ja	49	De	5	30	58	3	6	5	.....	.....	49	3	1	.....	2	19	.....	.....	20
239	Jy	253	De	221	92	129	1	7	18	.....	.....	23	9	.....	12	47	52	.....	.....	21
1,141	Oc	1,346	Ja	850	581	866	20	24	186	3	.....	269	12	227	35	223	326	.....	.....	22
4,793	Ja	5,748	Jy	4,402	2,341	3,172	57	106	582	61	13	956	71	882	317	1,167	1,301	4	.....	23
5,253	De	5,849	Je	4,508	2,174	4,680	117	151	674	58	1	2,054	27	925	214	1,262	1,141	.....	.....	24
1,078	Ja	1,413	De	917	484	663	10	30	146	6	18	197	3	163	104	267	208	.....	10	25
2,733	Mh	3,103	Jy	2,444	1,265	1,416	59	48	297	48	49	493	107	660	323	167	420	.....	.....	26
642	Oc	739	Mh	579	196	544	34	22	51	27	24	264	8	92	41	139	40	.....	5	27
2,881	De	2,982	Se	2,768	962	2,324	36	88	292	84	14	1,075	28	375	176	712	306	.....	12	28
3,495	Au	3,813	Ja	3,285	1,442	2,509	83	109	344	117	34	1,115	60	700	343	468	578	.....	16	29
349	Au	466	Fe	207	135	315	9	16	41	5	11	128	6	72	21	84	47	.....	4	30
1,107	Oc	1,312	Fe	915	366	895	11	39	138	34	6	410	20	237	79	175	102	.....	1	31
2,084	Jy	2,457	Se	1,630	851	1,720	52	82	260	32	28	815	52	380	167	411	292	.....	4	32
393	Mh	424	My	357	207	302	13	15	72	11	8	179	4	61	49	36	61	.....	.....	33
2,167	De	2,402	Jy	1,608	607	1,581	17	63	142	153	15	601	30	159	191	355	211	.....	2	34
149	My	168	De	110	55	112	5	6	17	7	5	38	1	33	6	28	21	.....	.....	35
2,169	Jy	2,294	No	1,889	1,117	930	53	45	355	45	63	345	77	93	266	402	303	.....	5	36
1,102	Jy	1,210	Mh	1,009	1,125	72	84	4	405	.....	.....	54	9	4	571	7	2	.....	3	37
110	Jy	121	Se	95	112	.....	6	.....	24	.....	.....	22	3	.....	57	.....	.....	1	6	38
19	Ja	28	No	10	8	3	.....	.....	1	.....	.....	5	.....	1	.....	.....	.....	.....	.....	39
149	.....	.....	.....	.....	214	.....	16	.....	33	.....	.....	41	.....	24	100	.....	.....	.....	.....	40
3,891	De	4,327	Fe	2,525	1,905	3,481	155	236	784	163	203	1,848	156	436	607	749	.....	.....	59	41
396	No	565	Ja	246	273	386	17	27	92	12	34	204	27	59	108	84	.....	.....	2	42
617	Jy	806	Ja	400	277	578	25	36	100	11	24	324	17	75	111	122	.....	.....	20	43
1,901	De	2,142	Fe	1,106	854	1,754	70	114	359	108	109	906	74	198	242	435	.....	.....	21	44
546	Se	657	Ja	406	316	519	33	34	128	26	36	326	16	58	108	76	.....	.....	16	45
181	Au	223	Je	113	80	87	3	8	40	.....	.....	44	4	31	33	4	.....	.....	.....	46
54	Oc	77	Fe	18	43	43	3	4	25	4	.....	17	1	15	14	3	.....	.....	.....	47
106	Ja	128	Ap	88	62	54	4	3	40	1	.....	18	17	5	1	27	.....	.....	.....	48

\* Same number reported for one or more other months.

† Includes enterprises in states as follows: Arizona, 1; Idaho, 11; Montana, 9; New Mexico, 1; Oregon, 16; and Washington, 1.

MINES AND QUARRIES.

TABLE 81.—DETAILED STATISTICS FOR THE GOLD, SILVER,

INDUSTRY, REGION, AND STATE.	PRINCIPAL EXPENSES OF OPERATION AND DEVELOPMENT.										
	Total.	SALARIES AND WAGES.			Supplies and materials.	Cost of ore purchased as material.	Cost of fuel.	Cost of purchased power.	Royalties and rents.	Taxes—Federal, state, county, and local.	Contract work.
		Salaried officers, superintendents, managers, and technical employees.	Clerks and other subordinate salaried employees.	Wage earners.							
<b>1 UNITED STATES, all industries.</b>	<b>3276,013,023</b>	<b>311,703,063</b>	<b>34,869,833</b>	<b>3123,466,838</b>	<b>369,557,370</b>	<b>36,602,398</b>	<b>316,217,933</b>	<b>310,011,604</b>	<b>36,969,672</b>	<b>318,376,870</b>	<b>33,948,392</b>
<b>2 Producing enterprises.....</b>	<b>262,756,657</b>	<b>10,580,771</b>	<b>4,736,464</b>	<b>122,630,242</b>	<b>64,872,542</b>	<b>6,602,398</b>	<b>15,737,317</b>	<b>9,607,446</b>	<b>8,896,234</b>	<b>18,237,579</b>	<b>2,655,074</b>
3 Copper.....	133,336,933	5,015,974	3,030,767	66,390,194	34,375,389	1,523,066	11,310,485	3,555,530	534,319	12,229,046	421,733
4 Lead and zinc.....	65,084,781	2,714,694	1,120,246	30,708,319	15,311,548	606,051	2,733,249	2,591,908	5,253,357	3,336,910	863,471
5 Gold and silver, lode mines.....	53,070,119	2,466,693	639,068	23,817,637	12,040,697	4,663,391	1,633,124	2,336,138	1,015,719	2,335,491	1,227,043
6 Gold, placer mines <sup>1</sup> .....	6,314,764	380,410	56,383	1,914,073	2,244,728	.....	30,459	1,126,874	35,899	356,133	122,807
<b>COFFEE:</b>											
<b>Western Region—</b>											
7 Arizona.....	56,817,409	2,280,584	1,240,797	24,855,574	13,454,473	1,528,056	4,034,605	1,161,670	385,213	7,568,314	292,123
8 California.....	3,374,294	153,376	36,730	1,550,430	1,078,351	.....	119,255	271,298	8,695	117,339	38,320
9 Colorado.....	76,612	12,350	100	43,032	17,448	.....	85	490	292	2,716	.....
10 Idaho.....	300,903	27,687	5,962	159,033	72,515	.....	7,663	11,295	9,283	3,951	3,514
11 Montana, Oregon, and Washington.....	22,722,159	830,682	706,766	13,436,350	5,096,185	.....	755,257	1,127,257	99,412	672,525	7,725
12 Utah, Nevada, and New Mexico.....	25,547,905	754,807	467,438	10,989,604	8,720,510	.....	2,199,533	806,203	30,989	1,508,660	80,071
<b>Lake Region—</b>											
13 Michigan.....	28,249,795	891,438	548,567	14,608,804	5,612,077	.....	4,146,775	114,043	.....	2,328,086	.....
<b>Central, Eastern, and Southern Regions—</b>											
14 Missouri, Tennessee, and Vermont.....	1,197,915	58,550	15,407	697,277	283,810	.....	47,312	63,260	4,835	27,455	.....
<b>LEAD AND ZINC:</b>											
<b>Western Region—</b>											
15 Arizona.....	266,448	29,041	2,398	114,651	89,344	.....	10,896	.....	2,472	3,155	17,490
16 California.....	323,460	38,245	4,455	180,334	57,755	.....	9,290	3,693	3,993	10,106	35,589
17 Colorado.....	3,123,401	184,672	134,947	1,435,531	523,492	310,952	34,798	191,572	199,660	75,948	31,838
18 Idaho.....	6,441,901	292,005	111,026	3,251,942	1,558,866	.....	118,176	280,312	135,803	537,512	156,759
19 Montana, Nevada, New Mexico, South Dakota, Utah, and Washington.....	11,195,204	562,620	213,354	6,038,184	3,003,626	.....	237,669	465,305	318,076	241,151	115,219
<b>Central Region—</b>											
20 Arkansas.....	41,187	7,420	900	17,965	10,810	.....	1,784	.....	2,018	790	.....
21 Illinois.....	642,751	35,485	7,642	312,046	136,213	.....	4,820	95,826	51,142	877	.....
22 Kansas.....	4,068,448	145,840	32,069	1,700,200	977,212	10,628	261,020	107,797	697,374	24,716	68,092
23 Missouri.....	12,590,239	486,909	190,998	5,965,929	2,567,624	669	1,106,807	98,415	295,427	1,319,663	65,798
24 Oklahoma.....	16,932,539	537,463	147,006	6,908,259	4,218,142	.....	733,285	742,944	3,106,495	359,546	228,899
25 Wisconsin.....	3,442,390	166,561	60,105	1,390,349	930,990	83,802	31,143	406,539	233,798	41,776	96,027
26 Eastern and Southern Regions—New Jersey, New York, Pennsylvania, and Tennessee.....	5,942,813	221,432	215,346	3,362,939	1,237,974	.....	283,561	199,503	212,129	211,669	48,260
<b>GOLD AND SILVER, LODGE MINES:</b>											
<b>Western Region—</b>											
27 Arizona.....	2,384,667	117,352	33,791	984,828	1,018,012	.....	64,091	74,388	50,267	175,095	366,813
28 California.....	7,806,017	319,304	46,913	3,870,121	2,172,364	334,213	150,402	572,413	43,464	275,316	20,507
29 Colorado.....	15,815,498	545,540	117,991	5,075,926	3,269,774	3,964,401	517,290	679,716	323,205	354,525	177,130
30 Idaho.....	1,077,544	47,959	14,930	541,206	276,632	.....	17,842	42,591	25,621	94,959	15,354
31 Montana.....	3,338,811	172,078	32,726	2,033,815	679,786	.....	62,210	88,255	100,273	126,777	59,457
32 Nevada.....	8,617,109	626,246	134,179	3,808,439	2,096,091	.....	265,463	534,707	121,179	250,450	177,313
33 New Mexico.....	1,032,212	55,787	15,636	456,555	315,865	9,506	79,797	1,749	51,101	43,035	3,201
34 Utah.....	6,771,845	362,959	78,144	3,300,293	1,286,813	297,961	180,125	251,993	69,879	558,281	432,397
35 Washington.....	462,433	27,922	2,451	255,472	106,465	.....	9,419	30,234	2,830	17,857	9,733
36 Oregon, South Dakota, and Texas.....	5,217,983	188,568	62,307	2,890,959	1,257,045	.....	270,440	47,072	1,466	496,516	3,612
<b>GOLD, PLACER MINES:</b>											
<b>Western Region—</b>											
37 California.....	5,197,855	302,542	45,689	1,475,406	1,941,920	.....	5,571	946,936	35,157	317,664	126,970
38 Colorado.....	510,390	24,155	3,420	190,508	141,936	.....	5,388	96,202	37,427	11,354	.....
39 Nevada.....	46,170	.....	.....	30,662	11,780	.....	500	1,544	928	756	.....
40 All other <sup>2</sup> .....	560,349	53,713	7,274	217,496	149,092	.....	9,000	79,192	12,387	26,358	5,837
<b>41 Nonproducing enterprises.....</b>	<b>13,254,365</b>	<b>1,122,291</b>	<b>123,419</b>	<b>5,636,646</b>	<b>4,634,728</b>	<b>.....</b>	<b>480,666</b>	<b>404,158</b>	<b>68,848</b>	<b>138,281</b>	<b>583,318</b>
<b>Western Region—</b>											
42 California, Oregon, and Washington.....	1,244,649	124,218	9,349	517,188	459,832	.....	23,810	43,469	2,169	14,336	50,278
43 Idaho, Montana, and Wyoming.....	1,842,723	160,974	9,690	965,209	533,792	.....	79,201	24,373	16,638	13,108	39,738
44 Arizona, Nevada, and Utah.....	7,430,899	592,277	64,407	2,806,808	2,960,013	.....	230,838	241,842	19,207	62,534	453,973
45 Colorado, South Dakota, and New Mexico.....	1,635,090	176,977	26,717	819,467	422,385	.....	84,837	43,850	488	22,657	37,712
<b>Lake Region—</b>											
46 Michigan.....	492,056	20,929	6,662	225,230	167,959	.....	40,446	5,632	.....	24,522	686
<b>Central Region—</b>											
47 Kansas, Missouri, Oklahoma, and Wisconsin.....	252,549	28,198	6,130	59,193	77,096	.....	12,400	33,243	24,346	1,012	10,031
<b>Eastern and Southern Regions—</b>											
48 Georgia, New York, North Carolina, and Virginia.....	358,399	18,718	10,464	244,561	63,651	.....	9,134	11,749	.....	122	.....

<sup>1</sup> Includes mines of platinum and related metals.

<sup>2</sup> Includes 1 enterprise in Georgia.

<sup>3</sup> Includes enterprises in states as follows: Arizona, 1; Idaho, 11; Montana, 9; New Mexico, 1; Oregon, 16; and Washington, 1.

COPPER, LEAD, AND ZINC MINING INDUSTRIES: 1919.

Capital.	Expenditures for development (included in principal expenses).	Value of products.	POWER USED.													Electric motors run by current generated by the enterprise reporting.		
			Aggregate.	Total horse-power.	• Prime movers.								Equipment operated by purchased power.					
					Steam engines (not turbines).		Steam turbines.		Internal-combustion engines.		Water wheels and turbines.		Electric motors.		Other.			
					Num-ber.	Horse-power.	Num-ber.	Horse-power.	Num-ber.	Horse-power.	Num-ber.	Horse-power.	Num-ber.	Horse-power.	Horse-power.			
51,461,004,981	331,001,610	338,038,335	961,329	579,232	1,579	316,339	106	163,723	1,292	73,335	243	25,845	9,723	399,645	2,302	4,441	204,170	1
1,356,825,983	25,635,693	335,038,335	838,444	557,528	1,437	306,392	104	163,392	948	63,610	200	23,423	9,183	375,731	1,895	4,393	203,401	2
853,629,617	12,392,349	151,264,067	523,591	384,458	848	345,398	79	123,223	129	16,327	10	1,510	3,647	135,968	1,165	3,252	161,024	3
197,222,814	4,265,914	78,579,247	229,541	117,537	411	48,621	21	35,480	433	35,415	20	3,871	2,339	111,674	140	625	22,624	4
290,228,711	7,822,971	58,232,230	149,680	50,437	192	20,133	4	4,750	370	11,149	125	14,405	2,523	98,663	590	494	18,892	5
24,674,441	291,289	9,268,561	35,632	3,496	2	40			16	719	25	2,647	624	32,226		22	601	6
387,759,328	6,393,094	84,217,141	158,614	133,792	293	60,778	21	73,037	64	9,947	6		528	23,837	1,015	1,139	77,126	7
17,906,644	540,738	2,307,610	12,648	2,670	3	400	3	1,600	16	235	2	535	179	9,978				8
722,255	35,149	26,723		25									2	25				9
3,814,280	96,439	340,309		235					6	235			18	750				10
146,138,993	1,426,236	23,365,290	84,793	24,375	30	23,555			13	345	6	475	741	60,390		8	105	11
143,489,317	4,131,776	30,269,748	90,195	62,088	243	41,179	44	15,456	26	5,403			1,731	28,007	150	1,200	27,475	12
147,793,096	539,630	24,476,326	109,580	161,353	326	127,961	11	23,220	4	162			261	8,236		888	56,083	13
6,022,104	119,287	1,164,930	6,770	2,025	7	1,626						2	187	4,745		17	230	14
1,011,764	101,006	127,843	634	634	2	65			18	599								15
5,919,640	142,854	261,454	536	536	6	155			15	381			9	290				16
16,564,300	780,131	2,622,150	12,384	1,979	5	650			1	4	6	1,325	240	10,405		60	1,000	17
54,762,694	200,577	9,229,723	25,479	1,171	3	138	2	930	2	42	12	61	444	24,258	60	7	750	18
42,892,955	1,237,109	12,800,842	27,612	8,226	22	3,790	1	375	72	2,491	3	1,600	537	19,336		57	1,627	19
228,800	3,500	14,595	547	547	4	270			6	277								20
490,642	16,534	621,296	1,978	30	1	80							61	1,948				21
4,465,207	231,373	4,872,968	11,496	8,267	45	3,135			53	4,647	7	585	56	3,129				22
28,758,399	586,047	16,879,177	57,088	50,545	187	21,301	14	25,115	35	4,129			105	6,453	90	332	13,149	23
27,628,036	590,701	18,979,726	65,123	33,324	127	10,210			227	22,814	2	300	346	21,858		13	490	24
7,824,755	149,692	3,816,913	9,758	88	2	30			3	58			334	9,670				25
8,714,932	209,191	6,062,662	26,567	12,080	7	3,077	4	9,000	1	3			287	14,477		166	5,868	26
12,936,527	669,105	3,523,447	5,107	2,762	17	1,601			61	1,161			98	2,345		5	32	27
24,494,493	1,027,359	8,773,737	33,412	11,949	10	1,871	2	250	67	1,365	32	8,463	527	21,463		52	2,770	28
54,042,972	1,455,315	16,786,716	32,803	9,436	75	6,711			10	1,50	13	2,575	638	22,985	85	13	698	29
8,525,755	211,728	1,396,915	2,693	377	10	280			6	44	3	53	54	2,186	130	9	260	30
30,374,264	1,042,284	2,817,067	9,121	2,650	18	945			19	302	11	1,403	124	6,471		19	817	31
38,262,116	1,672,213	9,637,431	32,505	5,202	13	590			142	4,444	5	168	705	27,408		8	255	32
10,396,916	297,521	297,406	2,311	2,196	8	195			27	2,001			5	1,115		39	1,057	33
50,947,549	1,269,222	8,449,506	16,249	4,521	18	2,855			9	203	5	1,463	242	11,563	165	21	823	34
2,494,621	58,099	451,625	1,264	411	3	120			6	291			15	653	200			35
29,012,488	167,145	6,024,460	14,412	10,933	12	4,965	2	4,500	23	1,188	16	280	115	3,479		323	12,175	36
19,087,232	140,076	7,937,654	29,488	2,180	2	40			3	50	18	2,090	502	27,306		5	95	37
1,827,400		570,819	2,365	130								1	51	2,215				38
76,500		63,649	140	24					4	24			21	116				39
3,585,309	61,183	796,439	3,639	1,052					9	645	6	407	50	2,587		17	506	40
105,280,998	12,346,117		48,785	21,454	142	7,997	2	330	344	9,715	42	3,412	540	20,914	417	48	769	41
15,068,487	1,064,239		6,222	3,102	20	579			22	473	22	2,050	63	3,120		13	281	42
14,432,652	1,756,319		5,910	3,951	44	2,534			49	852	12	555	37	1,927	32	1	15	43
52,622,547	7,282,269		21,166	9,057	21	1,391			242	7,626	1	40	330	11,979	130	33	448	44
14,811,388	1,522,323		6,501	3,543	48	2,457			22	394	6	692	83	2,803	155	1	25	45
6,042,839	394,687		1,168	980	4	650	2	330					13	188				46
1,510,955	148,129		1,396	606	3	286			7	320			11	690	100			47
746,130	198,131		422	215	2	100			2	40	1	75	3	207				48





# STONE.

## INTRODUCTION.

**Scope of the report.**—This report presents the results of the census of mines and quarries for the year 1919 relating to the stone-quarrying industries. It includes statistics showing: The progress of the industry by comparison of results of the 1919 census with those of the three preceding censuses of mines and quarries; the geographic distribution of the industries by states; the character of organization and the size of operating enterprises; the persons engaged in the industry; the land controlled and form of tenure of mineral land; power equipment and fuel used; statistics in detail for the stone industries in the United States, as a whole, for each industry separately, and for each industry in the states that can be shown without the disclosure of individual operations.

The report on the stone industries does not include statistics relating to the operation of quarries by penal and other governmental institutions. Returns were received from 122 such enterprises operating 87 limestone quarries, 14 granite quarries, 7 sandstone quarries, and 63 basalt quarries from which products valued at \$1,935,640 were obtained in 1919.

Only two operations for development of nonproducing properties were reported for the stone-quarrying industries for the year 1919 and statistics for these are omitted from this report as they would, if combined with data for producing enterprises, impair the value of these, and, if shown separately, would disclose individual operations. The data for the nonproducing enterprises will be combined with those for other nonproducing enterprises and presented in the detail tables for the United States.

**Definition of the industries.**—The statistics for the stone industries relate to the quarrying of stone of all kinds except operations, as noted in the following paragraphs, which are specifically omitted in order to avoid duplication of statistics for industries not classified as stone quarrying. The numerous varieties of stone have, for the purposes of the census, been assigned to six groups—limestone, granite, sandstone, basalt, slate, and marble—and the statistics on quarry operations are herein presented as for six industries correspondingly designated.

The limestone industry includes the quarrying of limestone, of the related rock dolomite, and of a small amount of other calcareous rock such as tufa, which is, in some places, called marl; but the digging of true calcareous marl is not included with the limestone quarrying. Statistics on the production of a small amount of chert in Arkansas and Florida are included with the statistics on limestone. Limestone is the

rock most used for building stone and constituted approximately one-third of all stone used for that purpose in 1919, but the principal uses of limestone are, first, for fluxing and as refractory materials and otherwise as material in many manufacturing industries; second, as crushed stone, rubble, and riprap used chiefly in road work, concrete, and rough construction work; and third, in agriculture. The quarrying and consumption of limestone in the manufacture of lime and of cement by the producers are not considered in the statistics here presented, as those operations are within the scope of the census of manufactures.

The granite industry includes the quarrying of granite and related granular igneous rocks, and includes a negligible amount of miscellaneous stone reported from Arizona, California, New York, and South Dakota. Granite is the rock principally used for monumental stone and, next to limestone, is the most important building stone; it is also the rock most commonly used for making paving blocks, and, as curbing and flagging, is second in importance to sandstone; three-fourths of the granite output, however, is used as crushed stone and as rubble and riprap.

The sandstone industry includes the quarrying of sandstone and quartzite (which embraces ganister) and some miscellaneous stone, as argillite from Arkansas, New Jersey, and New York; considerable quantities of siliceous mica schist used as ganister and some so-called "greenstones" from Pennsylvania. The sandstone industry as here considered includes the production of crushed sandstone for use as sand, about two-fifths of the output of the industry being used for this purpose in 1919. Other uses of sandstone were as crushed stone, rubble and riprap in rough construction work, as ganister and other refractory materials, as building stone, paving blocks, curbing, and flagging.

The basalt industry includes the quarrying of basalt, commonly known as trap rock, and other related rocks which are for the most part dark, heavy volcanic, rocks, and which are used almost entirely as crushed stone. For convenience in tabulation and in order to avoid disclosure of individual operations, reports for the quarrying of small amounts of miscellaneous stone in California, Idaho, Massachusetts, New York, Oregon, and Rhode Island, have been included in the basalt industry.

The slate industry includes the quarrying of slate for use as roofing, in switchboards and other electrical apparatus, for structural purposes, sanitary ware, grave vaults and covers, blackboards, bulletin boards and school slates, billiard table tops, and as crushed

"granules" for coating roofing felts, etc., and for other minor purposes. Nearly half of the slate output as measured in tons is used as "granules;" aside from this the principal uses are as structural material, roofing, and sanitary slate.

The marble industry includes the quarrying of marble, which is crystalline limestone. The pure white or handsome, variously colored varieties of marble are quarried chiefly for use as monumental and building stone. Other uses of marble are of minor importance. Data on the production of small amounts of serpentine or verde antique in Michigan are included with the statistics on marble.

In addition to excluding the quarrying of limestone for the manufacture of lime and cement, as noted above, the census of mines and quarries also excluded from the stone industries the following: The quarrying of shale for use either as clay or in the manufacture of cement; the quarrying of grits or millstones as this is presented separately as the millstones industry; the quarrying of soapstone which is presented in the talc and soapstone industry; the quarrying of stone of various kinds for use as hones, whetstones, scythe-stones, and rubbing stones which is part of the abrasive materials industry; the quarrying of tripoli, quartzite, and other siliceous rock for use as abrasive materials, or as silica or for other special uses as such operations are included either in the abrasive materials industry or in the silica industry.

Relatively little stone is used rough as obtained from the quarry but at most quarries the stone is broken, crushed, shaped, dressed, ground, or otherwise prepared. The breaking of stone into rubble and riprap, and the crushing of stone for road work, ballast, concrete, or for other construction purposes is quite general and is closely connected with the quarrying operation. Such processes have not been considered as beneficiation, and enterprises practicing them have not been counted as operating dressing mills or beneficiating plants. On the other hand, the cutting, sawing, finishing, and polishing of stone for monumental and building uses and for paving, curbing, and flagging and the fine grinding or pulverizing of stone for use in manufacturing industries and in agriculture are considered processes of beneficiation if carried on in connection with the quarrying. Such beneficiation was practiced by more than one-sixth of the stone-quarrying enterprises in 1919, and the statistics herein presented, relating primarily to stone quarrying, cover also the operation of beneficiating plants at the quarries.

Returns were received from stone producers who subjected their product to operations properly considered as manufacturing and when such operators made separate returns for the two phases of their

business the returns were included, respectively, in the census of mines and quarries and the census of manufactures. But when operators of such enterprises made one report covering the entire business the reports were, so far as possible, revised and segregated in order to be separately tabulated. However, this was generally not practicable and the full reports covering both the quarrying and the manufacturing ends of the business have been included in the census of mines and quarries for the stone industries as well as in the census of manufactures.

**Wage earners above and below ground.**—Stone of all kinds is quarried almost without exception from open or surface workings, and most of the wage earners in the stone-quarrying industries are classed as employed above ground. There are, however, a few limestone and marble quarries and some of the slate quarries in the United States which are underground workings. In 1919 some limestone enterprises in Alabama and Pennsylvania and slate enterprises in all producing eastern states reported wage earners employed below ground. A number of the slate quarries which reported wage earners below ground are merely deep open pits, but because of the hazards of operating these deep pits the classification of wage earners as employed underground, made by the reporting operators, was accepted.

**Method of reporting quantity and value of products.**—The statistics on the production of stone were collected in cooperation with the United States Geological Survey. For that purpose a supplemental schedule requesting special information desired by the Survey was provided in addition to the general schedule of the census. The Geological Survey required the quantity only of stone produced in various forms such as rough, dressed, crushed, ground, etc., classified by uses, but the quantity and value of the stone sold or used during 1919 classified in the same detail as the stone produced. In the reports from most of the enterprises the quantity produced and the quantity sold or used were identical, but in many reports they were different. As the census required only the value of stone actually produced—that is, quarried and prepared during the year 1919—the value of products reported by the Census Bureau for enterprises whose sales differed from the quarry output is the value of the stone quarried and prepared during 1919 computed on the basis of the average selling value of stone of like character sold or used. The Geological Survey has tabulated only the quantity and value of stone sold or used in 1919, which quantity may include considerable stone drawn from stock previously quarried, or may exclude stone quarried during the census year 1919 but not used or sold. This accounts for much of the difference in value of

stone products reported by the Bureau of the Census and by the Geological Survey. Another source of discrepancy is in the differences in classification, which are principally of three kinds: First, the Geological Survey has not considered as stone production the output of enterprises classified in the stone industry by the Bureau of the Census. This difference is limited chiefly to the sandstone industry, of which approximately two-fifths of the output is classified as sand by the Geological Survey and not tabulated as stone. Second, miscellaneous varieties of stone separately tabulated by the Geological Survey were included with several of the principal varieties by the Census Bureau. Third, the Geological Survey includes in its tabulation the value of finished stone products, such as monumental and building stone, for some enterprises for which the Bureau of the Census reports only the value of rough stone, the finishing operations having been reported as manufacturing conducted separately. Furthermore, minor differences in value are due to inclusion in the census tabulations of the value of by-products and miscellaneous receipts from quarry operations.

In order to indicate the extent of the differences in the value of products as noted above, the following

statement has been prepared to show the value of products for the stone industries as reported by the Bureau of the Census for 1919 and the value of various kinds of stone marketed in 1919 as reported by the Geological Survey.

INDUSTRY.	Bureau of the Census.	Geological Survey.
Total.....	\$101,684,919	\$102,789,791
Limestone.....	52,943,924	53,171,701
Granite.....	18,279,345	19,345,714
Sandstone.....	10,654,969	5,283,842
Basalt.....	9,657,977	8,944,686
Slate.....	5,720,792	6,030,648
Marble.....	4,397,912	8,042,297
Other stone.....		1,920,903

Tables 1 and 2 are introduced to show in this report data on the quantity and uses of the stone produced in the United States in 1919. Table 1 shows the output of stone in 1919 in the United States, including Alaska, Hawaii, and Porto Rico and also the production by governmental (including penal) institutions as reported by the Geological Survey. The quantity of stone produced for each of the principal uses and classified by kinds is shown in thousands of tons.

TABLE 1.—STONE PRODUCED, BY USES: 1919.

(Based on statistics from United States Geological Survey, Mineral Resources, "Stone in 1919" and "Slate in 1919.")

VARIETY OF STONE.	All uses.	Monumental stone.	Building stone.	Paving blocks.	Curbing and flagging.	Crushed stone.	Rubble and riprap.	Metallurgical and refractory uses. <sup>1</sup>	Other manufacturing uses.	Agricultural uses.	All other uses.
	Expressed in thousand tons (2,000 pounds).										
Total.....	65,949	399	1,167	387	229	33,876	2,353	22,376	2,978	1,393	791
Basalt.....	7,411		30	2		7,053	311				15
Granite.....	4,221	305	304	364	51	2,700	477				20
Limestone.....	49,780		394		7	21,762	1,162	21,455	2,978	1,393	609
Marble.....	333	94	85					115			36
Sandstone <sup>2</sup> .....	2,623		151	21	171	1,179	307	783			11
Slate.....	410		170			203					37
Other stone.....	1,191		33			979	96	23			60

<sup>1</sup> Includes limestone and marble for flux; and dolomite, sandstone (ganister), and mica schist as refractory materials.

<sup>2</sup> Includes roofing slates, other structural slate, and sanitary slate.

<sup>3</sup> In addition to the quantities here shown as reported by the Geological Survey, approximately 2,200 thousand tons of sandstone were produced for use as "sand."

<sup>4</sup> "Granules" for roofing.

In Table 2 the Geological Survey figures on quantity of stone produced have been recast in order to correlate them with the Census Bureau statistics on the quarrying industries. The Geological Survey data on production in Alaska, Hawaii, and Porto Rico, and by governmental institutions have been

excluded, the data on sandstone used as sand have been added, and the data on miscellaneous varieties of stone classified by the Geological Survey as "other stone" have been distributed with the statistics for the principal kinds of stone.

TABLE 2.—QUANTITY OF STONE PRODUCED, BY STATES: 1919.<sup>1</sup>

(Quantities expressed in tons of 2,000 pounds are approximate equivalents of quantities reported in various other units by the quarry operators.)

STATE.	Total.	Limestone. <sup>2</sup>	Granite. <sup>3</sup>	Sandstone. <sup>4</sup>	Basalt. <sup>5</sup>	Marble.	Slate.
	(Tons, 2,000 pounds.)						
United States.....	67,844,000	49,715,000	4,420,000	5,224,000	7,745,000	331,000	409,000
Alabama.....	880,000	859,000	.....	21,000	.....	( <sup>6</sup> )	.....
Arizona.....	515,000	162,000	7 354,000	( <sup>6</sup> )	.....	.....	.....
Arkansas.....	409,000	7 100,000	7,000	7 299,000	.....	3,000	.....
California.....	2,852,000	170,000	7 1,000,000	272,000	7 1,599,000	2,000	.....
Colorado.....	530,000	493,000	3,000	34,000	.....	.....	.....
Connecticut.....	1,281,000	( <sup>6</sup> )	53,000	24,000	1,204,000	.....	.....
Delaware.....	89,000	.....	89,000	.....	.....	.....	.....
District of Columbia.....	5,000	.....	6,000	.....	.....	.....	.....
Florida.....	129,000	7 129,000	.....	.....	.....	.....	.....
Georgia.....	293,000	89,000	209,000	.....	.....	( <sup>6</sup> )	.....
Idaho.....	103,000	100,000	.....	3,000	( <sup>6</sup> )	.....	.....
Illinois.....	5,682,000	4,959,000	.....	723,000	.....	.....	.....
Indiana.....	1,635,000	1,635,000	.....	( <sup>6</sup> )	.....	.....	.....
Iowa.....	513,000	.....	.....	.....	.....	.....	.....
Kansas.....	680,000	680,000	.....	.....	.....	.....	.....
Kentucky.....	1,216,000	1,201,000	.....	15,000	.....	.....	.....
Louisiana.....	( <sup>6</sup> )	( <sup>6</sup> )	.....	.....	.....	.....	.....
Maine.....	177,000	23,000	150,000	.....	.....	.....	4,000
Maryland.....	903,000	353,000	138,000	67,000	343,000	( <sup>6</sup> )	2,000
Massachusetts.....	1,372,000	54,000	384,000	58,000	7 868,000	8,000	.....
Michigan.....	7,206,000	7,187,000	.....	19,000	( <sup>6</sup> )	( <sup>6</sup> )	.....
Minnesota.....	462,000	216,000	75,000	29,000	142,000	.....	.....
Mississippi.....	( <sup>6</sup> )	( <sup>6</sup> )	.....	.....	.....	.....	.....
Missouri.....	1,138,000	1,116,000	( <sup>6</sup> )	.....	.....	22,000	.....
Montana.....	206,000	206,000	1,000	( <sup>6</sup> )	.....	.....	.....
Nebraska.....	204,000	204,000	.....	( <sup>6</sup> )	.....	.....	.....
Nevada.....	( <sup>6</sup> )	( <sup>6</sup> )	.....	.....	.....	( <sup>6</sup> )	.....
New Hampshire.....	105,000	.....	105,000	.....	.....	.....	.....
New Jersey.....	1,626,000	374,000	34,000	7 23,000	1,195,000	.....	.....
New Mexico.....	( <sup>6</sup> )	( <sup>6</sup> )	.....	( <sup>6</sup> )	.....	( <sup>6</sup> )	.....
New York.....	4,167,000	3,393,000	7 58,000	7 70,000	7 548,000	24,000	74,000
North Carolina.....	618,000	69,000	547,000	( <sup>6</sup> )	.....	.....	.....
North Dakota.....	.....	.....	.....	.....	.....	.....	.....
Ohio.....	8,160,000	7,703,000	.....	457,000	.....	.....	.....
Oklahoma.....	662,000	659,000	3,000	( <sup>6</sup> )	.....	.....	.....
Oregon.....	523,000	36,000	( <sup>6</sup> )	.....	7 487,000	( <sup>6</sup> )	.....
Pennsylvania.....	14,446,000	10,666,000	216,000	7 2,296,000	1,134,000	( <sup>6</sup> )	134,000
Rhode Island.....	117,000	( <sup>6</sup> )	40,000	.....	7 77,000	.....	.....
South Carolina.....	404,000	.....	404,000	.....	.....	.....	.....
South Dakota.....	137,000	13,000	( <sup>6</sup> )	119,000	.....	.....	.....
Tennessee.....	676,000	630,000	.....	( <sup>6</sup> )	.....	46,000	.....
Texas.....	599,000	548,000	51,000	.....	( <sup>6</sup> )	( <sup>6</sup> )	.....
Utah.....	315,000	315,000	.....	( <sup>6</sup> )	.....	.....	( <sup>6</sup> )
Vermont.....	490,000	39,000	133,000	.....	.....	100,000	188,000
Virginia.....	1,620,000	1,447,000	101,000	85,000	( <sup>6</sup> )	.....	7,000
Washington.....	243,000	24,000	8,000	( <sup>6</sup> )	211,000	.....	.....
West Virginia.....	2,294,000	1,971,000	.....	323,000	.....	.....	.....
Wisconsin.....	1,515,000	1,142,000	230,000	143,000	( <sup>6</sup> )	.....	.....
Wyoming.....	118,000	104,000	.....	14,000	.....	.....	.....
Undistributed.....	554,000	129,000	12,000	150,000	137,000	126,000	.....

<sup>1</sup> Based on statistics compiled by the United States Geological Survey and tabulated to conform with the Bureau of the Census classification of the stone-quarrying industries. <sup>2</sup> Includes 21,790 tons of miscellaneous stone. <sup>3</sup> Includes 199,140 tons of miscellaneous stone. <sup>4</sup> Includes 412,370 tons of miscellaneous stone. <sup>5</sup> Includes 517,540 tons of miscellaneous stone. <sup>6</sup> Included under "undistributed." <sup>7</sup> Includes miscellaneous unclassified stone. <sup>8</sup> Too small to be shown.

PRINCIPAL STATISTICS.

Summary for producing enterprises.—Operators in the stone-quarrying industries in 1919 reported 1,820 producing enterprises working 1,922 quarries in which an average of 42,986 wage earners were employed during the census year. The total value of all products of these enterprises was \$101,684,919. On the bases of total value of products and average number of wage earners employed, the stone industries, as a unit, ranked fifth among the mining industries in the United States in 1919.

The principal statistics for 1919 for the stone industries, as a whole, and for each industry separately are presented in Table 3. This table shows a segregation of the total value of products into the value of the stone produced, which amounted to \$100,423,476, and the value of other products or receipts from operation, which was \$1,261,443; and also gives the ap-

proximate quantity of the stone quarried. In Table 4 the receipts from quarrying operations, other than the value of the principal stone product, are shown in detail for each stone industry.

The rank of the several stone-quarrying industries among the mining industries of the United States, according to value of products and number of wage earners, is shown in the following tabular statement:

INDUSTRY.	VALUE OF PRODUCTS.		WAGE EARNERS.	
	Amount.	Rank among the mining industries.	Average number.	Rank among the mining industries.
Limestone.....	\$52,943,924	7	22,069	5
Granite.....	18,279,345	8	8,049	8
Sandstone.....	10,694,969	10	4,287	11
Basalt.....	9,657,977	13	3,336	13
Slate.....	5,720,792	16	3,513	12
Marble.....	4,397,912	17	1,732	15

TABLE 3.—PRINCIPAL STATISTICS, PRODUCING ENTERPRISES: 1919.

	Total.	Limestone.	Granite.	Sandstone.	Basalt.	Slate.	Marble.
Number of enterprises.....	1,820	895	358	255	163	101	48
Number of quarries.....	1,922	925	381	276	174	104	62
Number of enterprises operating mills and dressing plants in connection with quarries.....	354	44	152	66	6	61	25
Mineral land operated.....acres..	252,242	122,820	30,659	48,720	15,625	5,440	28,969
Persons engaged.....	48,087	24,705	8,951	4,897	3,791	3,852	1,891
Proprietors and firm members, total.....	1,288	633	328	170	77	64	7
Number performing manual labor.....	417	175	145	63	30	21	3
Salaried employees.....	3,813	2,008	574	481	378	375	152
Wage earners (average number).....	42,986	22,069	8,049	4,287	3,336	3,513	1,732
Power used (aggregate horsepower).....	376,808	213,717	55,674	33,890	37,307	20,613	15,628
Capital.....	\$148,759,533	\$82,124,867	\$18,823,980	\$18,955,321	\$12,899,171	\$6,923,172	\$9,083,822
Principal expenses:							
Salaries.....	\$7,168,808	\$3,726,568	\$1,196,456	\$330,633	\$751,247	\$400,255	\$254,119
Wages.....	\$45,534,798	\$23,926,332	\$8,587,659	\$4,448,811	\$3,991,307	\$3,128,249	\$1,452,440
Contract work.....	\$905,976	\$665,557	\$118,637	\$54,161	\$41,406	\$65,633	\$20,582
Supplies and materials.....	\$18,441,469	\$10,068,220	\$2,593,040	\$1,664,432	\$2,080,899	\$632,459	\$652,439
Fuel.....	\$5,267,846	\$2,897,432	\$353,636	\$597,353	\$562,827	\$228,954	\$147,644
Purchased power.....	\$2,213,459	\$1,278,958	\$361,185	\$250,909	\$157,161	\$188,505	\$76,741
Royalties and rents.....	\$1,381,290	\$667,751	\$139,202	\$131,970	\$250,199	\$157,788	\$34,380
Taxes.....	\$2,088,170	\$1,119,861	\$377,646	\$196,309	\$198,613	\$73,238	\$123,603
Expenditures for development (included in the above items).....	\$1,241,343	\$764,673	\$156,870	\$96,555	\$131,800	\$60,531	\$30,914
Total value of all products.....	\$101,684,919	\$52,943,924	\$18,279,345	\$10,684,969	\$6,657,977	\$5,720,792	\$4,397,912
Stone produced—value.....	\$100,423,476	\$51,967,290	\$18,247,617	\$10,672,134	\$6,430,528	\$5,720,054	\$4,385,853
Approximate quantity..... tons, 2,000 pounds..	67,844,000	49,715,000	4,420,000	5,224,000	7,745,000	409,000	331,000
Other products—value.....	\$1,261,443	\$976,634	\$31,728	\$12,835	\$227,449	\$738	\$12,069

TABLE 4.—OTHER PRODUCTS: 1919.

INDUSTRY.	Total.	Mineral products.	Lime. <sup>1</sup>	Unspecified products.	Power sold and work or miscellaneous services for others.
All industries.....	\$1,261,443	\$27,288	\$574,688	\$346,110	\$313,367
Limestone.....	976,634	* 15,196	574,688	143,814	237,986
Granite.....	31,728			6,250	25,478
Sandstone.....	12,835			400	12,435
Basalt.....	227,449	* 33		190,646	36,770
Slate.....	738				738
Marble.....	12,069	* 12,069			

<sup>1</sup> Includes only the lime reported by enterprises of which the principal product was stone and which did not report statistics for lime separately.  
<sup>2</sup> Includes coal, clay, marble, and silica.    <sup>3</sup> Fuller's earth.    <sup>4</sup> Limestone.

Geographic distribution.—The stone-quarrying industry is distributed generally throughout the United States, and forms an important part of the mineral industry in many states. The statistics for the stone industries are presented by states or by the usual geographic divisions without attempt to group or divide states into special regions or districts which are characteristic of the several industries.

Table 5 presents the statistics for the combined quarrying industries by geographic divisions, with per cent distribution for each item.

TABLE 5.—STATISTICS FOR THE COMBINED STONE INDUSTRIES, PRODUCING ENTERPRISES: 1919.

DIVISION.	Number of enterprises.	Number of quarries.	Mineral land operated (acres).	Wage earners (average number).	Power used (aggregate horsepower).	Capital.	Cost of supplies and materials. <sup>1</sup>	Wages.	Value of products.
United States.....	1,820	1,922	252,242	42,986	376,808	\$148,759,533	\$25,923,764	\$45,534,798	\$101,684,919
New England:									
Number or amount.....	268	292	28,594	6,679	57,150	21,003,113	3,313,580	7,478,865	17,363,413
Per cent of total.....	14.7	15.2	11.3	15.5	15.2	14.1	12.8	16.4	17.1
Middle Atlantic:									
Number or amount.....	542	578	77,375	13,402	97,917	43,545,385	8,482,049	15,058,849	30,091,987
Per cent of total.....	29.8	30.1	30.7	31.2	26.0	29.3	32.7	33.1	30.2
East North Central:									
Number or amount.....	311	320	51,441	8,720	120,115	47,857,804	7,047,694	9,623,642	25,911,756
Per cent of total.....	17.1	16.6	20.4	20.3	31.9	32.2	27.2	21.1	25.5
West North Central:									
Number or amount.....	192	201	6,877	2,995	24,149	6,502,359	1,422,627	3,142,820	6,138,502
Per cent of total.....	10.5	10.5	2.7	7.0	6.4	4.4	5.5	6.9	6.0
South Atlantic:									
Number or amount.....	179	186	30,315	5,531	33,427	11,625,676	2,686,110	4,961,539	10,300,476
Per cent of total.....	9.8	9.7	12.0	12.9	8.9	7.8	10.0	10.9	10.1
East South Central:									
Number or amount.....	107	114	8,453	2,684	18,307	5,205,912	1,271,998	2,037,917	4,556,567
Per cent of total.....	5.9	5.9	3.4	6.2	4.9	3.5	4.9	4.5	4.5
West South Central:									
Number or amount.....	59	60	20,850	944	8,277	3,571,152	546,083	847,498	1,938,922
Per cent of total.....	3.2	3.1	8.3	2.2	2.2	2.4	2.1	1.9	1.9
Mountain:									
Number or amount.....	78	82	14,082	943	4,679	4,093,684	411,699	1,053,682	2,084,407
Per cent of total.....	4.3	4.3	* 5.6	2.2	1.2	2.8	1.6	2.3	2.0
Pacific:									
Number or amount.....	84	89	14,265	1,088	12,787	5,354,448	841,929	1,300,991	2,700,899
Per cent of total.....	4.6	4.6	5.7	2.5	3.4	3.6	3.2	2.9	2.7

<sup>1</sup> Includes cost of fuel and purchased power.

The figures show that the Middle Atlantic and the East North Central divisions, which are the most populous and the most important industrially, are also the most important in the stone industries; the New England division is third in importance, and the South Atlantic is fourth.

Table 6 shows the number of enterprises, the average number of wage earners employed, and the value of products, for each of the stone industries, by states, ranked according to value of products, and it also shows for each industry the per cent distribution among the states of wage earners and of value of products. Pennsylvania was the leading state in four industries, lime-

stone, sandstone, basalt, and slate. Vermont led in the granite and marble industries and was second in the slate industry. More than half of the limestone industry was concentrated in the leading states, Pennsylvania, Ohio, Indiana, and New York; of the granite industry, in Vermont, Massachusetts, North Carolina, Wisconsin, and New Hampshire; of the sandstone industry, in Pennsylvania and Ohio; of the basalt industry, in Pennsylvania, New Jersey, and Massachusetts. More than three-fourths of the slate industry was concentrated in Pennsylvania and Vermont and nearly three-fourths of the marble industry in Vermont and Tennessee.

TABLE 6.—STONE INDUSTRIES AND STATES, RANKED BY VALUE OF PRODUCTS, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND STATE.	WAGE EARNERS.			VALUE OF PRODUCTS.		INDUSTRY AND STATE.	WAGE EARNERS.			VALUE OF PRODUCTS.	
	Number of enterprises.	Average number.	Per cent distribution.	Amount.	Per cent distribution.		Number of enterprises.	Average number.	Per cent distribution.	Amount.	Per cent distribution.
UNITED STATES—All industries.	1,820	42,986	.....	\$101,684,919	.....	GRANITE—Continued.					
LIMESTONE.....	895	22,069	100.0	52,943,924	100.0	New York.....	7	101	1.3	\$173,404	0.9
Pennsylvania.....	184	5,573	25.3	12,881,213	24.3	Arizona.....	3	58	0.7	128,777	0.7
Ohio.....	90	2,262	10.2	6,742,496	12.7	New Jersey.....	4	48	0.6	81,198	0.4
Indiana.....	67	1,800	8.2	4,619,801	8.7	Washington.....	5	42	0.5	74,958	0.4
New York.....	55	1,739	7.9	4,597,042	8.7	Montana.....	3	4	(*)	12,944	0.1
Illinois.....	41	1,244	5.6	3,776,026	7.1	All other states <sup>1</sup> .....	34	253	3.1	585,343	3.2
Missouri.....	70	1,171	5.3	2,355,736	4.4	SANDSTONE.....	265	4,287	100.0	10,684,969	100.0
West Virginia.....	17	1,008	4.5	1,927,490	3.6	Pennsylvania.....	100	1,673	39.0	3,524,563	33.1
Virginia.....	31	777	3.5	1,610,644	3.1	Ohio.....	21	875	20.4	2,750,352	25.8
Alabama.....	15	835	3.8	1,340,961	2.5	Illinois.....	15	288	6.7	1,320,389	12.4
Kentucky.....	47	676	3.1	1,126,109	2.1	West Virginia.....	15	343	8.0	885,588	8.3
Wisconsin.....	33	382	1.7	1,107,790	2.1	New York.....	22	146	3.4	301,315	2.8
Kansas.....	35	484	2.2	835,147	1.6	Wisconsin.....	12	133	3.1	231,078	2.2
Oklahoma.....	13	278	1.3	567,288	1.1	South Dakota.....	5	99	2.1	140,068	1.3
California.....	13	245	1.1	540,967	1.0	Kentucky.....	5	56	1.3	91,363	0.9
Tennessee.....	21	349	1.6	534,848	1.0	California.....	6	27	0.6	65,074	0.6
Colorado.....	14	228	1.0	526,738	1.0	New Jersey.....	5	20	0.5	46,775	0.4
Iowa.....	25	246	1.1	476,650	0.9	Colorado.....	7	14	0.3	45,723	0.4
New Jersey.....	10	258	1.2	459,059	0.9	All other states <sup>1</sup> .....	42	623	14.5	1,254,681	11.7
Minnesota.....	10	156	0.7	311,180	0.6	BASALT.....	163	3,336	100.0	9,657,977	100.0
Utah.....	7	148	0.7	291,234	0.6	Pennsylvania.....	29	721	21.6	2,268,791	23.8
Maryland.....	11	149	0.7	241,638	0.5	New Jersey.....	36	637	19.1	1,928,025	20.0
Arkansas.....	6	114	0.5	220,070	0.4	Massachusetts.....	21	547	16.4	1,548,611	16.0
Montana.....	7	87	0.4	191,887	0.4	Connecticut.....	20	363	10.9	1,262,579	13.1
Florida.....	4	111	0.5	177,301	0.3	California.....	16	262	7.9	635,588	6.6
Georgia.....	5	80	0.4	174,821	0.3	Maryland.....	10	155	5.5	306,075	3.9
Arizona.....	4	45	0.2	153,211	0.3	Oregon.....	9	124	3.7	294,512	3.1
Oregon.....	4	69	0.3	138,708	0.3	Washington.....	8	99	3.0	240,742	2.5
Vermont.....	4	40	0.2	76,152	0.1	All other states <sup>1</sup> .....	14	400	12.0	1,079,754	11.2
All other states <sup>1</sup> .....	52	1,520	6.9	4,940,397	9.3	SLATE.....	101	3,513	100.0	5,720,792	100.0
GRANITE.....	858	8,049	100.0	18,279,345	100.0	Pennsylvania.....	42	1,892	53.9	2,651,533	46.3
Vermont.....	27	1,062	13.2	3,563,734	19.5	Vermont.....	38	1,030	29.6	2,037,338	36.0
Massachusetts.....	42	1,034	12.8	2,405,165	13.2	New York.....	9	134	3.8	445,027	7.8
North Carolina.....	16	959	11.9	1,576,250	8.6	Virginia.....	4	210	6.0	208,068	3.5
Wisconsin.....	14	753	9.4	1,484,979	8.1	Maryland.....	4	85	2.4	76,683	1.3
New Hampshire.....	23	589	7.3	1,427,979	7.8	All other states <sup>1</sup> .....	4	153	4.4	287,033	5.0
Maine.....	42	747	9.3	1,300,996	7.1	MARBLE.....	48	1,732	100.0	4,397,912	100.0
Minnesota.....	27	392	4.9	1,135,391	6.2	Vermont.....	15	570	32.9	2,108,672	48.0
Georgia.....	20	580	7.2	885,063	4.9	Tennessee.....	13	540	31.2	1,088,131	24.7
South Carolina.....	10	322	4.0	747,976	4.1	New York.....	6	100	5.8	249,286	5.7
Rhode Island.....	8	262	3.3	733,683	4.0	All other states <sup>1</sup> .....	14	522	30.1	951,623	21.6
California.....	17	162	2.0	563,485	3.1						
Maryland.....	9	235	2.9	495,651	2.7						
Pennsylvania.....	29	197	2.4	435,654	2.4						
Virginia.....	7	157	2.0	259,569	1.4						
Connecticut.....	11	92	1.1	206,546	1.1						

<sup>1</sup> Includes enterprises in states as follows: Connecticut, 1; Idaho, 3; Louisiana, 1; Maine, 1; Massachusetts, 1; Michigan, 11; Nebraska, 8; Nevada, 1; North Carolina, 2; South Dakota, 3; Texas, 12; Wyoming, 8.  
<sup>2</sup> Less than one-tenth of 1 per cent.  
<sup>3</sup> Includes enterprises in states as follows: Arkansas, 2; Colorado, 8; Delaware, 2; District of Columbia, 3; Missouri, 2; Oklahoma, 6; Oregon, 2; South Dakota, 1; Texas, 8.  
<sup>4</sup> Includes enterprises in states as follows: Alabama, 2; Arizona, 2; Arkansas, 7; Connecticut, 3; Idaho, 2; Indiana, 1; Maryland, 2; Massachusetts, 1; Michigan, 2; Minnesota, 1; Missouri, 4; Montana, 2; North Carolina, 1; Oklahoma, 2; Tennessee, 2; Utah, 2; Virginia, 2; Washington, 1; Wyoming, 3.  
<sup>5</sup> Includes enterprises in states as follows: Delaware, 1; Idaho, 1; Michigan, 1; New York, 4; Rhode Island, 4; Texas, 1; Wisconsin, 2.  
<sup>6</sup> Includes enterprises in states as follows: Maine, 3; Utah, 1.  
<sup>7</sup> Includes enterprises in states as follows: Alabama, 2; California, 3; Georgia, 1; Maryland, 2; Massachusetts, 3; Michigan, 1; Missouri, 1; Texas, 1.

PROGRESS OF THE INDUSTRY.

Comparative summary for producing quarries in the United States: 1889-1919.—Table 7 presents for producing enterprises, in the combined quarrying industries and in each stone industry separately, the prin-

cipal statistics reported at the Fourteenth Census and the three preceding censuses of mines and quarries and gives the percentages of increase or decrease. Although in some industries and over some census periods notable increases are shown for certain items, never-

theless there has been a general decline which was very marked between 1909 and 1919, and is best shown by the decrease in the average number of wage earners employed. The increases shown in the prin-

cipal expenses and in the value of products in 1902 as compared with 1889 and in 1919 as compared with 1909 are in large part due to general price increases and do not mark increase in volume of business.

TABLE 7.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES, 1919, 1909, 1902, AND 1889.

	1919	1909	1902	1889	PER CENT OF INCREASE. <sup>1</sup>		
					1909-1919	1902-1909	1889-1902
ALL STONE INDUSTRIES.							
Number of enterprises.....	1,820	3,988	5,470	( <sup>2</sup> )	-54.4	-27.1	.....
Number of quarries.....	1,922	4,603	5,764	4,163	-58.2	-20.1	38.5
Persons engaged.....	48,067	* 87,849	.....	.....	-45.3	.....	.....
Proprietors and firm members, total.....	1,288	4,106	( <sup>3</sup> )	( <sup>3</sup> )	-68.6	.....	.....
Number performing manual labor.....	417	1,827	( <sup>3</sup> )	( <sup>3</sup> )	-77.2	.....	.....
Salaried employees.....	3,813	* 4,673	5,279	1,086	-18.4	-11.5	386.1
Wage earners (average number).....	42,966	79,070	71,156	81,288	-45.6	11.1	-12.5
Power used (aggregate horsepower).....	376,806	308,442	178,878	( <sup>4</sup> )	24.2	69.6	.....
Capital.....	\$148,769,533	* \$132,641,780	( <sup>5</sup> )	\$90,212,433	12.2	.....	.....
Principal expenses:							
Salaries.....	7,168,303	* 5,146,739	\$4,488,339	30,555,877	39.3	14.7	} 37.5
Wages.....	45,634,798	39,661,871	37,515,907	.....	14.8	5.7	
Contract work.....	995,976	463,590	36,981	( <sup>4</sup> )	114.8	( <sup>1</sup> )	.....
Supplies and materials.....	18,441,459	8,800,134	* 10,739,736	7,923,220	109.6	.....	.....
Fuel and purchased power.....	7,481,305	3,482,054	( <sup>4</sup> )	( <sup>4</sup> )	114.9	.....	.....
Royalties and rents.....	1,381,290	1,439,445	1,156,754	( <sup>4</sup> )	-4.0	24.4	.....
Taxes.....	2,068,170	* 496,235	( <sup>4</sup> )	( <sup>4</sup> )	320.8	.....	.....
Value of products.....	101,684,919	75,992,908	70,462,438	53,035,620	33.8	7.8	32.9

	1919	1909	1902	1889	PER CENT OF INCREASE. <sup>1</sup>			1919	1909	1902	1889	PER CENT OF INCREASE. <sup>1</sup>		
					1909-1919	1902-1909	1889-1902					1909-1919	1902-1909	1889-1902
Number of enterprises.....	895	1,665	3,137	( <sup>2</sup> )	-46.2	-46.9	.....	163	196	( <sup>2</sup> )	( <sup>2</sup> )	-16.8	.....	.....
Number of quarries.....	925	1,916	3,246	1,954	-51.7	-41.0	66.1	174	220	( <sup>2</sup> )	( <sup>2</sup> )	-20.9	.....	.....
Persons engaged.....	24,705	33,623	.....	.....	-26.5	.....	.....	3,791	5,744	( <sup>2</sup> )	( <sup>2</sup> )	-34.0	.....	.....
Proprietors and firm members, total.....	633	1,634	( <sup>3</sup> )	( <sup>3</sup> )	-61.3	.....	.....	77	116	( <sup>3</sup> )	( <sup>3</sup> )	-33.6	.....	.....
Number performing manual labor.....	176	640	( <sup>3</sup> )	( <sup>3</sup> )	-72.7	.....	.....	20	32	( <sup>3</sup> )	( <sup>3</sup> )	.....	.....	.....
Salaried employees.....	2,003	1,700	2,231	433	17.8	-23.8	415.2	378	372	( <sup>3</sup> )	( <sup>3</sup> )	1.6	.....	.....
Wage earners (av. number).....	22,069	30,299	31,547	30,211	-27.1	-4.0	4.4	3,336	5,256	( <sup>3</sup> )	( <sup>3</sup> )	-36.5	.....	.....
Power used (aggregate h. p.).....	213,717	125,024	64,500	( <sup>4</sup> )	70.9	93.8	.....	37,307	29,211	( <sup>4</sup> )	( <sup>4</sup> )	27.7	.....	.....
Capital.....	\$82,124,367	\$44,089,476	( <sup>5</sup> )	\$27,022,325	86.3	.....	.....	\$12,899,171	\$8,745,553	( <sup>5</sup> )	( <sup>5</sup> )	47.5	.....	.....
Principal expenses:														
Salaries.....	3,726,593	1,717,906	\$1,843,747	10,121,985	116.9	-6.8	63.9	751,247	347,094	( <sup>5</sup> )	( <sup>5</sup> )	116.4	.....	.....
Wages.....	23,926,332	14,082,185	14,750,638	.....	69.9	-4.5	.....	3,991,307	2,538,984	( <sup>5</sup> )	( <sup>5</sup> )	57.2	.....	.....
Contract work.....	665,557	201,880	36,381	( <sup>4</sup> )	229.7	454.9	.....	41,406	60,204	( <sup>5</sup> )	( <sup>5</sup> )	-31.2	.....	.....
Supplies and materials.....	10,968,220	3,754,125	* 5,408,912	4,227,246	192.2	.....	.....	2,030,869	1,018,090	( <sup>5</sup> )	( <sup>5</sup> )	99.5	.....	.....
Fuel and purchased power.....	4,174,390	1,507,628	( <sup>4</sup> )	( <sup>4</sup> )	177.0	.....	.....	719,988	279,082	( <sup>5</sup> )	( <sup>5</sup> )	158.0	.....	.....
Royalties and rents.....	667,751	488,919	422,693	( <sup>4</sup> )	36.6	15.7	.....	250,199	282,501	( <sup>5</sup> )	( <sup>5</sup> )	-11.4	.....	.....
Taxes.....	1,119,861	161,117	( <sup>4</sup> )	( <sup>4</sup> )	565.1	.....	.....	198,613	32,301	( <sup>5</sup> )	( <sup>5</sup> )	514.9	.....	.....
Value of products.....	52,943,824	29,612,492	30,441,801	19,015,179	77.5	-2.0	59.4	9,657,977	5,578,317	( <sup>5</sup> )	( <sup>5</sup> )	73.1	.....	.....
GRANITE.														
Number of enterprises.....	358	707	853	814	-49.4	-17.1	4.8	101	185	174	( <sup>2</sup> )	-45.4	6.3	.....
Number of quarries.....	381	826	906	874	-53.9	-8.8	3.7	104	219	199	212	-52.5	10.1	-6.1
Persons engaged.....	8,951	20,394	.....	.....	-56.1	.....	.....	3,852	9,486	.....	.....	-59.4	.....	.....
Proprietors and firm members, total.....	328	730	( <sup>3</sup> )	( <sup>3</sup> )	-55.1	.....	.....	64	221	( <sup>3</sup> )	( <sup>3</sup> )	-71.0	.....	.....
Number performing manual labor.....	145	318	( <sup>3</sup> )	( <sup>3</sup> )	-54.4	.....	.....	21	70	( <sup>3</sup> )	( <sup>3</sup> )	.....	.....	.....
Salaried employees.....	874	920	1,377	222	-37.6	-33.2	590.3	275	463	437	75	-40.5	5.7	.....
Wage earners (av. number).....	8,049	18,744	18,896	22,091	-57.1	-0.5	-14.7	3,513	8,603	5,920	6,085	-60.1	48.7	-2.9
Power used (aggregate h. p.).....	55,674	61,095	46,986	( <sup>4</sup> )	-8.9	30.0	.....	20,613	29,777	25,454	( <sup>4</sup> )	-30.5	17.0	.....
Capital.....	\$18,823,980	\$25,422,307	( <sup>5</sup> )	\$19,115,449	-26.0	.....	.....	\$6,923,172	\$12,177,350	( <sup>5</sup> )	\$10,569,503	-43.1	.....	.....
Principal expenses:														
Salaries.....	1,196,456	1,069,532	\$1,227,885	9,620,485	11.9	-12.9	27.9	409,255	405,479	\$334,879	2,218,982	0.9	21.1	} 58.3
Wages.....	8,587,659	11,112,195	11,072,996	.....	-22.7	0.4	.....	3,128,249	4,068,653	3,177,459	.....	-23.5	23.7	
Contract work.....	118,637	65,744	( <sup>4</sup> )	( <sup>4</sup> )	80.5	.....	.....	95,633	28,962	( <sup>4</sup> )	( <sup>4</sup> )	230.2	.....	.....
Supplies and materials.....	2,593,040	1,921,912	* 2,493,065	1,446,485	34.9	.....	.....	632,459	521,761	* 680,361	282,114	21.2	.....	.....
Fuel and purchased power.....	1,094,821	757,078	( <sup>4</sup> )	( <sup>4</sup> )	44.6	.....	.....	417,459	327,397	( <sup>4</sup> )	( <sup>4</sup> )	27.5	.....	.....
Royalties and rents.....	139,302	194,349	194,862	( <sup>4</sup> )	-28.4	-0.3	.....	157,788	271,252	269,267	( <sup>4</sup> )	-41.8	0.7	.....
Taxes.....	377,646	113,097	( <sup>4</sup> )	( <sup>4</sup> )	233.9	.....	.....	73,288	33,192	( <sup>4</sup> )	( <sup>4</sup> )	120.6	.....	.....
Value of products.....	18,279,345	18,997,976	18,257,944	14,464,095	-3.8	4.1	26.2	5,720,792	6,064,174	5,696,051	3,482,513	-5.5	6.3	63.6

See footnotes at end of this table.



MINES AND QUARRIES.

TABLE 7.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES, 1919, 1909, 1902, AND 1889—Continued.

	1919	1909	1902	1889	PER CENT OF INCREASE. <sup>1</sup>			1919	1909	1902	1889	PER CENT OF INCREASE. <sup>1</sup>		
					1909-	1902-	1889-					1909-	1902-	1889-
					1919	1909	1902					1919	1909	1902
SANDSTONE.														
Number of enterprises.....	255	1,158	1,231	(?)	-78.0	-5.9		48	77	75	74			
Number of quarries.....	276	1,314	1,330	1,020	-79.0	-1.2	30.4	62	108	83	103	-42.6	-19.4	
Persons engaged.....	4,897	11,774			-58.4			1,891	6,502			-70.9		
Props. and firm members, total.....	179	1,356	(?)	(?)	-96.8			7	49	(?)	(?)			
Performing manual labor.....	53	771	(?)	(?)	-93.1			3	6	(?)	(?)			
Salaried employees.....	431	606	882	260	-28.9	-31.3	239.2	152	287	352	96	-47.0	-18.5	
Wage earners (av. number).....	4,287	9,812	10,783	18,458	-56.3	-9.0	-41.6	1,732	6,166	4,070	4,433	-71.9	51.5	
Power used (aggregate h. p.).....	33,869	36,556	27,652	( <sup>1</sup> )	-7.4	32.2		15,628	21,779	14,286	( <sup>1</sup> )	-28.2	52.4	
Capital.....	\$18,955,321	\$17,068,244	( <sup>2</sup> )	\$18,412,224	11.1			\$9,033,522	\$20,272,755	( <sup>3</sup> )	\$15,002,842	-55.4		
Principal expenses:														
Salaries.....	830,633	591,967	\$740,807	6,785,214	40.3	-20.1	3.8	254,119	383,107	\$341,021	1,809,211	-33.7	12.3	
Wages.....	4,448,811	4,760,851	6,302,174	( <sup>4</sup> )	-8.6	-24.5		1,452,440	3,079,023	2,212,640	( <sup>5</sup> )	-52.8	39.2	
Contract work.....	54,161	79,456	600	( <sup>6</sup> )	-31.8	( <sup>1</sup> )		20,582	27,344	( <sup>7</sup> )	( <sup>8</sup> )	-24.7		
Supplies and materials.....	1,664,432	1,039,969	1,336,576	1,311,789	60.0			552,439	544,327	7825,822	655,586	1.5		
Fuel and purchased power.....	848,262	349,180	( <sup>9</sup> )	( <sup>9</sup> )	142.9			224,385	261,689	( <sup>9</sup> )	( <sup>9</sup> )	-14.3		
Royalties and rents.....	131,970	154,513	204,517	( <sup>9</sup> )	-14.6	-24.4		84,380	47,911	65,385	( <sup>9</sup> )	-28.2	-26.7	
Taxes.....	195,309	58,145	( <sup>9</sup> )	( <sup>9</sup> )	235.9			123,503	70,616	( <sup>9</sup> )	( <sup>9</sup> )	74.9		
Value of products.....	10,684,969	9,290,829	11,022,460	12,505,663	15.0	-15.7	-11.9	4,397,912	6,239,120	5,044,182	3,488,170	-29.5	23.7	

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.  
<sup>2</sup> Not reported.  
<sup>3</sup> Includes 326 salaried officials and employees which can not be distributed among the several industries.  
<sup>4</sup> Comparable figures not available.  
<sup>5</sup> Includes \$4,878,095 which can not be distributed among the several industries.  
<sup>6</sup> Includes \$631,564 which can not be distributed among the several industries.  
<sup>7</sup> Includes cost of fuel.  
<sup>8</sup> Includes \$27,767 which can not be distributed among the several industries.

Comparison by geographic divisions: 1919 and 1909.—Table 8 shows for 1919 and 1909 the value of products for the stone industries as a whole and for each industry separately by geographic divisions with percentage of increase or decrease during the census period. Although the significance of the absolute increases or decreases is impaired by the price changes

during the census interval, as mentioned above, the table serves to localize the changes within industries and geographic divisions. Thus it is apparent, considering all industries as a unit, that the general decline was less in the East South Central, South Atlantic, Middle Atlantic, and East North Central than in other divisions.

TABLE 8.—VALUE OF PRODUCTS: 1919 AND 1909.

DIVISION.	ALL INDUSTRIES.			LIMESTONE.			GRANITE.		
	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>
United States.....	\$101,684,919	\$75,992,908	33.8	\$52,943,924	\$29,832,492	77.5	\$18,279,345	\$18,997,976	-3.8
New England.....	17,363,413	16,555,959	4.9	139,867	17,580	695.5	9,638,103	9,497,135	1.5
Middle Atlantic.....	30,691,987	19,188,911	59.9	17,938,214	7,570,565	136.9	690,256	1,107,698	-37.7
East North Central.....	25,911,756	16,712,774	55.0	19,886,076	12,594,606	57.7	1,484,979	1,438,105	3.6
West North Central.....	6,138,502	5,562,974	10.3	4,281,292	4,296,879	-0.3	1,293,959	851,909	51.9
South Atlantic.....	10,300,476	6,324,278	62.9	4,206,193	1,332,151	215.7	4,036,836	3,269,355	23.5
East South Central.....	4,556,567	2,793,868	63.1	3,001,918	1,868,734	60.6			
West South Central.....	1,936,922	1,426,989	35.7	1,280,325	939,076	36.3	179,893	197,771	-9.0
Mountain.....	2,084,407	2,373,519	-12.2	1,550,354	845,415	83.4	278,314	230,859	20.6
Pacific.....	2,700,889	5,053,636	-46.6	679,695	368,486	84.5	677,005	2,410,244	-71.9

DIVISION.	SANDSTONE.			BASALT.			SLATE.			MARBLE.		
	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>	1919	1909	Per cent of increase. <sup>1</sup>
United States.....	\$10,684,969	\$9,290,829	15.0	\$9,657,977	\$5,578,317	73.1	\$5,720,792	\$6,054,174	-5.5	\$4,397,912	\$6,239,120	-29.5
New England.....	12,918	472,703	-97.3	2,995,604	949,938	215.3	2,344,081	2,088,400	12.2	2,232,850	3,530,208	-36.5
Middle Atlantic.....	3,882,653	3,813,418	1.8	4,835,018	2,561,227	88.8	3,096,590	3,604,985	-14.1	249,286	531,018	-53.1
East North Central.....	4,447,809	2,669,105	66.6	111,083	15,958	596.1				1,809		
West North Central.....	470,806	411,949	14.3		3,337					92,445		
South Atlantic.....	981,018	297,644	229.7	475,743	281,746	68.9	279,751	315,129	-11.2	320,935	828,353	-61.3
East South Central.....	124,702	159,936	-22.0							1,429,947	785,198	86.9
West South Central.....	402,391	210,224	91.4	61,343	79,918	-23.2				12,970		
Mountain.....	247,285	690,864	-64.2	8,044	118,225	-93.2	400				488,156	
Pacific.....	115,377	565,086	-79.6	1,171,142	1,567,973	-25.3		45,660		57,670	96,187	-40.0

<sup>1</sup> A minus sign (-) denotes decrease.

## CHARACTER OF ORGANIZATION.

The character of organization of enterprises operating producing quarries is shown in Table 9 for the stone industries in the United States as a whole and for each industry for selected states. More than half of all the stone-quarrying enterprises in the United States were operated by corporations, and for the separate stone industries the proportion ranged from 42.5 per cent in the granite industry to 91.7 per cent in the marble industry. Corporations reported 83.2 per cent of all the wage earners in the country employed in quarrying operations and contributed 86 per cent of the total value of products of the stone industries. The table shows that in Pennsylvania, the leading state in the limestone industry, corporations,

although predominant in average number of wage earners employed and value of products reported, were outnumbered by enterprises operated under different forms of organization; in two of the other states shown in the limestone industry this was also true. In the granite industry in all of the leading states, which could be shown, except Minnesota and North Carolina, the number of enterprises operated by corporations was exceeded by the number under the other forms of organization, but the corporations in each state reported more than half the wage earners and the value of products. Among the states shown for the sandstone industry, New York reported most of the enterprises unincorporated, although these were relatively the less important enterprises.

TABLE 9.—CHARACTER OF ORGANIZATION, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND SELECTED STATES.	ALL CLASSES.			CORPORATION.						
	Number of enterprises.	Average number of wage earners.	Value of products.	Enterprises.		Wage earners.		Value of products.		
				Number.	Per cent of total.	Average number.	Per cent of total.	Amount.	Per cent of total.	Per enterprise.
UNITED STATES—All industries.....	1,820	42,986	\$101,684,919	975	53.6	35,778	83.2	\$87,467,874	86.0	\$89,711
Limestone.....	895	22,089	52,943,924	462	51.6	18,324	83.0	45,890,605	86.7	99,330
Granite.....	358	8,049	18,279,345	152	42.5	6,392	79.4	14,504,529	79.3	95,425
Sandstone.....	255	4,287	10,684,969	142	55.7	3,574	83.4	9,406,068	88.0	66,233
Basalt.....	163	3,336	9,657,977	104	63.8	2,809	84.2	8,327,573	86.2	80,076
Slate.....	101	3,513	5,720,792	71	70.3	3,007	85.6	5,021,062	87.8	70,719
Marble.....	48	1,732	4,397,912	44	91.7	1,672	96.5	4,318,737	98.2	98,153
LIMESTONE.										
Pennsylvania.....	184	5,573	12,881,213	69	37.5	4,352	78.1	10,611,380	82.4	153,788
Ohio.....	90	2,262	6,742,496	45	50.0	2,087	92.3	6,287,088	93.2	139,713
Indiana.....	67	1,800	4,619,801	35	52.2	1,644	91.3	4,347,674	94.1	124,219
New York.....	55	1,739	4,597,942	36	65.5	1,561	89.8	4,220,582	91.8	117,238
Illinois.....	41	1,244	3,776,626	31	75.6	1,187	95.4	3,678,329	97.4	118,656
Missouri.....	70	1,171	2,355,736	39	55.7	877	74.9	1,921,761	81.6	49,276
West Virginia.....	17	1,003	1,927,490	13	76.5	991	98.8	1,897,479	98.4	145,960
Virginia.....	31	777	1,610,544	19	61.3	483	62.2	954,563	59.3	50,240
Alabama.....	15	835	1,340,961	12	80.0	814	97.5	1,316,990	98.2	109,749
Kentucky.....	47	676	1,126,109	19	40.4	484	71.6	827,054	73.4	43,529
Wisconsin.....	33	382	1,107,790	15	45.5	295	77.2	912,657	82.4	60,844
GRANITE.										
Vermont.....	27	1,062	3,563,734	13	48.1	919	86.5	3,153,017	88.5	242,540
Massachusetts.....	42	1,034	2,405,165	15	35.7	798	77.2	1,744,981	72.6	116,332
North Carolina.....	16	959	1,576,250	10	62.5	935	97.5	1,517,850	96.3	151,785
New Hampshire.....	23	589	1,427,979	7	30.4	317	53.8	727,894	51.0	103,983
Maine.....	42	747	1,300,996	10	23.8	614	82.2	1,061,749	81.6	106,175
Minnesota.....	27	392	1,135,391	14	51.9	287	73.2	845,883	74.5	60,420
SANDSTONE.										
Pennsylvania.....	100	1,673	3,534,563	52	52.0	1,238	74.0	2,733,682	77.3	52,571
Illinois.....	15	288	1,329,389	11	73.3	278	95.5	1,313,757	98.8	119,432
West Virginia.....	15	343	885,588	10	66.7	331	95.5	870,380	98.3	87,036
New York.....	22	146	301,315	8	36.4	88	60.3	186,124	61.8	23,266
BASALT.										
Pennsylvania.....	29	721	2,298,791	16	55.2	660	91.5	2,108,543	91.7	131,784
New Jersey.....	36	637	1,928,025	23	63.9	540	84.8	1,665,957	86.4	72,433
Massachusetts.....	21	547	1,548,611	16	76.2	459	83.9	1,324,967	85.6	82,810
Connecticut.....	20	363	1,262,579	13	65.0	313	86.2	1,134,685	89.9	87,283
SLATE.										
Pennsylvania.....	42	1,892	2,651,533	34	81.0	1,706	90.2	2,451,467	92.5	72,102
Vermont.....	38	1,039	2,057,388	21	55.3	742	71.4	1,605,968	78.1	78,475
New York.....	9	134	445,027	5	55.6	111	82.8	397,183	89.2	79,437
Virginia.....	4	210	203,068	4	100.0	210	100.0	203,068	100.0	50,767
MARBLE.										
Vermont.....	15	570	2,108,872	15	100.0	570	100.0	2,108,872	100.0	140,591
Tennessee.....	13	540	1,088,131	13	100.0	540	100.0	1,088,131	100.0	83,702

TABLE 9.—CHARACTER OF ORGANIZATION, PRODUCING ENTERPRISES: 1919—Continued.

INDUSTRY AND SELECTED STATES.	INDIVIDUAL.						FIRM.							
	Enterprises.		Wage earners.		Value of products.		Enterprises.		Wage earners.		Value of products.			
	Number.	Per cent of total.	Average number.	Per cent of total.	Amount.	Per cent of total.	Per enterprise.	Number.	Per cent of total.	Average number.	Per cent of total.	Amount.	Per cent of total.	Per enterprise.
UNITED STATES—All industries.....	1 528	20.0	1 3,775	8.8	\$7,555,579	7.4	\$14,310	2 317	17.4	2 3,433	8.0	\$6,661,466	6.6	\$21,014
Limestone.....	289	32.3	2,011	9.1	3,705,252	7.0	12,821	144	16.1	1,734	7.9	3,348,067	6.3	23,250
Granite.....	126	35.2	988	11.7	2,109,442	11.5	16,742	80	22.3	719	8.9	1,665,374	9.1	20,817
Sandstone.....	61	23.9	279	6.5	500,761	4.7	8,209	52	20.4	434	10.1	779,140	7.3	14,983
Basalt.....	40	24.5	356	10.7	973,256	10.1	24,321	19	11.7	171	5.1	356,854	3.7	18,782
Slate.....	8	7.9	131	3.7	187,099	3.3	23,462	22	21.8	375	10.7	612,031	9.0	23,274
Marble.....	4	8.3	60	3.5	79,175	1.8	19,794							
LIMESTONE.														
Pennsylvania.....	76	41.3	682	12.2	1,263,417	9.8	16,624	39	21.2	539	9.7	1,006,416	7.8	25,806
Ohio.....	30	33.3	81	3.6	245,901	3.6	8,197	15	16.7	94	4.2	209,507	3.1	13,967
Indiana.....	21	31.3	83	4.6	142,106	3.1	6,767	11	16.4	73	4.1	130,021	2.8	11,820
New York.....	10	18.2	36	2.1	81,279	1.8	8,128	9	16.4	142	8.2	296,081	6.4	32,868
Illinois.....	10	24.4	57	4.6	98,297	2.6	9,830							
Missouri.....	23	32.9	205	17.5	307,543	13.1	13,371	8	11.4	89	7.6	126,432	5.4	15,804
West Virginia.....								4	23.5	12	1.2	30,011	1.6	7,503
Virginia.....	4	12.9	10	1.3	12,500	0.8	3,125	8	25.8	284	36.6	643,481	40.0	80,435
Alabama.....	3	20.0	21	2.5	23,971	1.8	7,990							
Kentucky.....	20	42.6	113	16.7	152,009	13.5	7,600	8	17.0	79	11.7	147,046	13.1	18,381
Wisconsin.....	13	39.4	66	17.3	137,545	12.4	10,580	6	15.2	21	5.5	57,588	6.2	11,518
GRANITE.														
Vermont.....	14	51.9	143	13.5	410,717	11.5	29,337							
Massachusetts.....	16	38.1	185	17.9	501,836	20.9	31,365	11	26.2	51	4.9	158,348	6.6	14,395
North Carolina.....	3	18.8	20	2.1	48,400	3.1	16,133	3	18.8	4	0.4	10,000	0.8	3,333
New Hampshire.....	9	39.1	69	11.7	131,857	9.2	14,654	7	30.4	203	34.5	568,208	39.8	81,173
Maine.....	18	42.9	93	12.4	153,843	11.8	8,547	14	33.3	40	5.4	85,404	6.6	6,100
Minnesota.....	6	22.2	53	13.5	148,458	13.1	24,743	7	25.9	52	13.3	141,050	12.4	20,150
SANDSTONE.														
Pennsylvania.....	25	25.0	156	9.3	281,979	8.0	11,279	23	23.0	279	16.7	518,902	14.7	22,561
Illinois.....								4	26.7	10	3.5	15,632	1.2	3,908
West Virginia.....								6	33.3	12	3.5	15,228	1.7	3,046
New York.....	7	31.8	29	19.9	66,140	22.0	9,449	7	31.8	29	19.9	49,061	16.3	7,007
BASALT.														
Pennsylvania.....	10	34.5	48	6.7	164,690	7.2	16,466	3	10.3	13	1.8	25,558	1.1	8,519
New Jersey.....	13	36.1	97	15.2	262,068	13.6	20,159							
Massachusetts.....	5	23.8	88	16.1	223,644	14.4	44,729							
Connecticut.....	3	15.0	12	3.3	29,666	2.3	9,889	4	20.0	38	10.5	98,228	7.8	24,557
SLATE.														
Pennsylvania.....	3	7.1	68	3.6	74,715	2.8	24,905	5	11.9	118	6.2	125,351	4.7	25,070
Vermont.....	3	7.9	52	5.0	89,790	4.4	29,980	14	36.8	245	23.6	361,630	17.6	25,831
New York.....								4	44.4	23	17.2	47,844	10.8	11,961
Virginia.....														
MARBLE.														
Vermont.....														
Tennessee.....														

<sup>1</sup> Includes 2 firms in the marble industry to avoid disclosure of individual operations.  
<sup>2</sup> The total for the United States includes 11 enterprises, employing 205 wage earners and reporting products to the value of \$365,735, which were operated under other forms of organization. These enterprises were reported in the stone industries as follows: Limestone, 4; granite, 2; sandstone, 1; basalt, 3; slate, 1. The statistics for 2 firms in the marble industry are excluded to avoid disclosure of individual operations.  
<sup>3</sup> Includes 2 firms.  
<sup>4</sup> Includes 2 other forms of organization.  
<sup>5</sup> Includes 1 other form of organization.  
<sup>6</sup> Includes 1 firm.  
<sup>7</sup> Includes 2 individuals.  
<sup>8</sup> Includes 1 firm and 2 other forms of organization.  
<sup>9</sup> Includes 1 individual.

## SCALE OF OPERATION.

Size of enterprises according to value of products.—Table 10 shows, for the stone industries, as a whole, and for each industry separately, the number of producing enterprises and the value of products, for enterprises classified according to the value of their products, and gives the percentage distribution for each class. The larger enterprises, which were those producing more than \$100,000 worth of product, constituted only 13.6 per cent of the total number of enterprises, but they produced 63.8 per cent of the total value of products. This relation, a majority of the value of products from a few of the enterprises, holds good for

each of the stone industries except slate, in which the class of enterprises producing over \$100,000 worth of product contributed only 46.2 per cent of the total value of products. In the marble industry one-fourth of the enterprises were relatively small, with products valued at not more than \$20,000 worth each. In the basalt and slate industries the small enterprises of this class constituted approximately one-third of the total number, and in the limestone, granite, and sandstone industries they were more than one-half of the total number but contributed less than 10 per cent of the total value of products. Table 11 shows, for selected states in each industry, the same data as given in Table 10 for the industries.

TABLE 10.—SIZE OF PRODUCING ENTERPRISES, BY VALUE OF PRODUCTS: 1919.

INDUSTRY AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.		INDUSTRY AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.	
	Num-ber.	Per cent distribu-tion.	Amount.	Per cent distribu-tion.		Num-ber.	Per cent distribu-tion.	Amount.	Per cent distribu-tion.
<b>ALL INDUSTRIES.....</b>	<b>1,820</b>	<b>100.0</b>	<b>\$101,684,919</b>	<b>100.0</b>	<b>SANDSTONE.....</b>	<b>255</b>	<b>100.0</b>	<b>\$10,684,969</b>	<b>100.0</b>
Less than \$5,000.....	414	22.7	1,035,173	1.0	Less than \$5,000.....	79	31.0	191,820	1.8
\$5,000 to \$20,000.....	510	28.0	5,632,561	5.5	\$5,000 to \$20,000.....	78	30.6	841,052	7.9
\$20,000 to \$100,000.....	649	35.7	30,121,363	29.6	\$20,000 to \$100,000.....	72	28.2	3,085,163	28.4
\$100,000 to \$500,000.....	223	12.3	43,547,229	42.8	\$100,000 and over <sup>1</sup> .....	26	10.2	6,616,935	61.9
\$500,000 to \$1,000,000.....	16	0.9	10,405,310	10.2	<b>BASALT.....</b>	<b>163</b>	<b>100.0</b>	<b>9,657,977</b>	<b>100.0</b>
\$1,000,000 to \$5,000,000.....	8	0.4	10,943,283	10.8	Less than \$5,000.....	20	12.3	48,034	0.5
<b>LIMESTONE.....</b>	<b>895</b>	<b>100.0</b>	<b>52,943,924</b>	<b>100.0</b>	\$5,000 to \$20,000.....	40	24.5	490,470	5.1
Less than \$5,000.....	208	23.2	507,076	1.0	\$20,000 to \$100,000.....	77	47.2	3,850,020	39.9
\$5,000 to \$20,000.....	259	28.9	2,915,675	5.5	\$100,000 and over <sup>1</sup> .....	26	16.0	5,269,463	54.6
\$20,000 to \$100,000.....	310	34.6	14,429,913	27.3	<b>SLATE.....</b>	<b>101</b>	<b>100.0</b>	<b>5,720,792</b>	<b>100.0</b>
\$100,000 to \$500,000.....	103	11.5	20,824,355	39.4	Less than \$5,000.....	13	12.9	36,448	0.6
\$500,000 to \$1,000,000.....	10	1.1	6,904,529	13.0	\$5,000 to \$20,000.....	21	20.8	276,824	4.8
\$1,000,000 to \$5,000,000.....	5	0.6	7,352,376	13.9	\$20,000 to \$100,000.....	55	54.5	2,784,500	48.3
<b>GRANITE.....</b>	<b>358</b>	<b>100.0</b>	<b>18,279,345</b>	<b>100.0</b>	\$100,000 and over <sup>1</sup> .....	12	11.9	2,648,020	46.2
Less than \$5,000.....	90	25.1	241,093	1.3	<b>MARBLE.....</b>	<b>48</b>	<b>100.0</b>	<b>4,397,912</b>	<b>100.0</b>
\$5,000 to \$20,000.....	104	29.1	1,027,383	5.6	Less than \$5,000.....	4	8.3	10,702	0.2
\$20,000 to \$100,000.....	110	30.7	4,786,424	26.2	\$5,000 to \$20,000.....	8	16.7	81,157	1.8
\$100,000 to \$500,000.....	50	14.0	9,344,547	51.1	\$20,000 to \$100,000.....	25	52.1	1,255,344	28.5
\$500,000 and over <sup>1</sup> .....	4	1.1	2,879,898	15.8	\$100,000 and over <sup>1</sup> .....	11	22.9	3,050,709	69.4

<sup>1</sup> Includes the group "\$1,000,000 to \$5,000,000."  
<sup>2</sup> Includes the groups "\$500,000 to \$1,000,000," and "\$1,000,000 to \$5,000,000."  
<sup>3</sup> Includes the group "\$500,000 to \$1,000,000."

TABLE 11.—SIZE OF PRODUCING ENTERPRISES, BY VALUE OF PRODUCTS, FOR SELECTED STATES: 1919.

INDUSTRY, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.		INDUSTRY, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.	
	Num-ber.	Per cent distribu-tion.	Amount.	Per cent distribu-tion.		Num-ber.	Per cent distribu-tion.	Amount.	Per cent distribu-tion.
<b>LIMESTONE.</b>					<b>LIMESTONE—continued.</b>				
<b>PENNSYLVANIA.....</b>	<b>184</b>	<b>100.0</b>	<b>\$12,881,213</b>	<b>100.0</b>	<b>VIRGINIA.....</b>	<b>31</b>	<b>100.0</b>	<b>\$1,610,544</b>	<b>100.0</b>
Less than \$5,000.....	45	24.5	110,846	0.9	Less than \$5,000.....	9	29.0	21,315	1.3
\$5,000 to \$20,000.....	59	32.1	665,786	5.1	\$5,000 to \$20,000.....	4	12.9	37,733	2.3
\$20,000 to \$100,000.....	55	29.9	2,391,033	18.6	\$20,000 to \$100,000.....	13	41.9	623,535	38.7
\$100,000 to \$500,000.....	19	10.3	4,104,544	31.9	\$100,000 to \$500,000.....	5	16.1	927,911	57.6
\$500,000 and over <sup>1</sup> .....	6	3.3	5,619,019	43.6	<b>ALABAMA.....</b>	<b>15</b>	<b>100.0</b>	<b>1,340,961</b>	<b>100.0</b>
<b>OHIO.....</b>	<b>90</b>	<b>100.0</b>	<b>6,742,496</b>	<b>100.0</b>	Less than \$20,000 <sup>2</sup> .....	4	26.7	40,323	3.0
Less than \$5,000.....	21	23.3	56,573	0.8	\$20,000 to \$100,000.....	7	48.7	377,460	28.1
\$5,000 to \$20,000.....	28	31.1	315,973	4.7	\$100,000 to \$500,000.....	4	26.7	923,178	68.8
\$20,000 to \$100,000.....	28	31.1	1,458,040	21.6	<b>KENTUCKY.....</b>	<b>47</b>	<b>100.0</b>	<b>1,126,109</b>	<b>100.0</b>
\$100,000 and over <sup>1</sup> .....	13	14.4	4,911,910	72.9	Less than \$5,000.....	12	25.5	29,217	2.6
<b>INDIANA.....</b>	<b>67</b>	<b>100.0</b>	<b>4,619,801</b>	<b>100.0</b>	\$5,000 to \$20,000.....	20	42.6	212,585	18.9
Less than \$5,000.....	21	31.3	82,674	1.1	\$20,000 to \$100,000.....	12	25.5	532,194	47.3
\$5,000 to \$20,000.....	20	29.9	209,293	4.5	\$100,000 to \$500,000.....	3	6.4	252,113	31.3
\$20,000 to \$100,000.....	16	23.9	851,761	18.4	<b>WISCONSIN.....</b>	<b>33</b>	<b>100.0</b>	<b>1,107,790</b>	<b>100.0</b>
\$100,000 and over <sup>1</sup> .....	10	14.9	3,506,073	75.9	Less than \$5,000.....	10	30.3	27,513	2.5
<b>NEW YORK.....</b>	<b>55</b>	<b>100.0</b>	<b>4,597,942</b>	<b>100.0</b>	\$5,000 to \$20,000.....	8	24.2	67,691	6.1
Less than \$5,000.....	7	12.7	17,141	0.4	\$20,000 to \$100,000.....	11	33.3	438,504	39.6
\$5,000 to \$20,000.....	11	20.0	114,573	2.5	\$100,000 to \$500,000.....	4	12.1	574,682	51.8
\$20,000 to \$100,000.....	24	43.6	1,080,617	23.5	<b>GRANITE.</b>				
\$100,000 and over <sup>1</sup> .....	13	23.6	3,385,611	73.6	<b>VERMONT.....</b>	<b>27</b>	<b>100.0</b>	<b>3,563,734</b>	<b>100.0</b>
<b>ILLINOIS.....</b>	<b>41</b>	<b>100.0</b>	<b>3,776,626</b>	<b>100.0</b>	Less than \$20,000 <sup>4</sup> .....	12	44.4	43,340	1.2
Less than \$5,000.....	6	14.6	11,126	0.3	\$20,000 to \$100,000.....	7	25.9	366,503	10.3
\$5,000 to \$20,000.....	11	26.8	141,562	3.7	\$100,000 and over <sup>3</sup> .....	8	29.6	3,153,891	88.5
\$20,000 to \$100,000.....	11	26.8	508,266	13.5	<b>MASSACHUSETTS.....</b>	<b>42</b>	<b>100.0</b>	<b>2,405,165</b>	<b>100.0</b>
\$100,000 and over <sup>2</sup> .....	13	31.7	3,115,672	82.5	Less than \$5,000.....	6	14.3	19,875	0.8
<b>MISSOURI.....</b>	<b>70</b>	<b>100.0</b>	<b>2,355,736</b>	<b>100.0</b>	\$5,000 to \$20,000.....	10	23.8	88,409	3.7
Less than \$5,000.....	15	21.4	35,789	1.5	\$20,000 to \$100,000.....	19	45.2	820,374	34.1
\$5,000 to \$20,000.....	24	34.3	265,194	11.3	\$100,000 and over <sup>1</sup> .....	7	16.7	1,476,507	61.4
\$20,000 to \$100,000.....	26	37.1	1,147,412	48.7	<b>NORTH CAROLINA.....</b>	<b>16</b>	<b>100.0</b>	<b>1,576,250</b>	<b>100.0</b>
\$100,000 to \$500,000.....	5	7.1	907,341	38.5	Less than \$20,000 <sup>4</sup> .....	5	31.2	16,500	1.0
<b>WEST VIRGINIA.....</b>	<b>17</b>	<b>100.0</b>	<b>1,927,490</b>	<b>100.0</b>	\$20,000 to \$100,000.....	6	37.5	252,964	16.0
Less than \$20,000 <sup>3</sup> .....	5	29.4	31,611	1.6	\$100,000 and over <sup>1</sup> .....	5	31.2	1,306,786	82.9
\$20,000 to \$100,000.....	7	41.2	500,872	26.0					
\$100,000 and over <sup>1</sup> .....	5	29.4	1,395,007	72.4					

<sup>1</sup> Includes the group "\$1,000,000 to \$5,000,000."  
<sup>2</sup> Includes the group "\$500,000 to \$1,000,000."  
<sup>3</sup> Includes the group "Less than \$5,000."  
<sup>4</sup> Includes the group "\$5,000 to \$20,000."  
<sup>5</sup> Includes the groups "\$500,000 to \$1,000,000" and "\$1,000,000 to \$5,000,000."

TABLE 11.—SIZE OF PRODUCING ENTERPRISES, BY VALUE OF PRODUCTS, FOR SELECTED STATES: 1919—Contd.

INDUSTRY, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.		INDUSTRY, STATE, AND VALUE OF PRODUCT PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.	
	Number.	Per cent distribution.	Amount.	Per cent distribution.		Number.	Per cent distribution.	Amount.	Per cent distribution.
<b>GRANITE—continued.</b>					<b>BASALT.</b>				
WISCONSIN	14	100.0	\$1,484,979	100.0	PENNSYLVANIA	29	100.0	\$2,298,791	100.0
Less than \$20,000 <sup>1</sup>	5	35.7	29,798	2.0	Less than \$5,000	5	17.2	14,300	0.6
\$20,000 to \$100,000	3	21.4	118,947	7.9	\$5,000 to \$20,000	10	34.5	102,425	4.5
\$100,000 to \$500,000	6	42.9	1,338,236	90.1	\$20,000 to \$100,000	9	31.0	374,520	16.3
					\$100,000 to \$500,000	5	17.2	1,807,546	78.6
NEW HAMPSHIRE	23	100.0	1,427,979	100.0	NEW JERSEY	36	100.0	1,928,025	100.0
Less than \$5,000	8	34.8	20,808	1.5	Less than \$20,000 <sup>1</sup>	14	38.9	168,630	8.7
\$5,000 to \$20,000	4	17.4	40,088	2.8	\$20,000 to \$100,000	15	41.7	788,977	39.9
\$20,000 to \$100,000	6	26.1	250,020	17.5	\$100,000 to \$500,000	7	19.4	990,418	51.4
\$100,000 to \$500,000	5	21.7	1,117,083	78.2	MASSACHUSETTS	21	100.0	1,548,611	100.0
MAINE	42	100.0	1,300,996	100.0	Less than \$20,000 <sup>1</sup>	4	19.0	28,806	1.5
Less than \$5,000	17	40.5	47,413	3.6	\$20,000 to \$100,000	10	47.6	508,432	32.8
\$5,000 to \$20,000	16	38.1	163,614	12.6	\$100,000 to \$500,000	7	33.3	1,016,373	65.6
\$20,000 to \$100,000	4	9.5	192,942	14.8	CONNECTICUT	20	100.0	1,262,579	100.0
\$100,000 to \$500,000	5	11.9	897,027	68.9	Less than \$5,000	3	15.0	2,601	0.2
MINNESOTA	27	100.0	1,135,391	100.0	\$5,000 to \$20,000	3	15.0	32,952	2.6
Less than \$5,000	3	11.1	6,994	0.6	\$20,000 to \$100,000	11	55.0	586,522	46.5
\$5,000 to \$20,000	10	37.0	126,196	11.1	\$100,000 to \$500,000	3	15.0	640,504	50.7
\$20,000 to \$100,000	11	40.7	484,477	42.7	CALIFORNIA	16	100.0	635,588	100.0
\$100,000 to \$500,000	3	11.1	517,724	45.6	Less than \$5,000	4	25.0	10,468	1.6
					\$5,000 to \$20,000	3	18.8	32,376	5.1
					\$20,000 and over <sup>2</sup>	9	56.2	592,744	93.3
SANDSTONE.					PENNSYLVANIA—SLATE.	42	100.0	2,651,538	100.0
PENNSYLVANIA	100	100.0	3,534,563	100.0	Less than \$5,000	5	11.9	17,013	0.6
Less than \$5,000	26	26.0	73,633	2.1	\$5,000 to \$20,000	5	11.9	54,872	2.1
\$5,000 to \$20,000	35	35.0	408,942	11.4	\$20,000 to \$100,000	25	59.5	1,278,380	48.2
\$20,000 to \$100,000	29	29.0	1,245,790	35.2	\$100,000 to \$500,000	7	16.7	1,301,285	49.1
\$100,000 to \$500,000	10	10.0	1,811,198	51.2	VERMONT	38	100.0	2,087,388	100.0
OHIO	21	100.0	2,759,352	100.0	Less than \$5,000	3	7.9	7,627	0.4
Less than \$5,000	4	19.0	13,333	0.5	\$5,000 to \$20,000	12	31.6	164,777	8.0
\$5,000 to \$20,000	8	38.1	31,057	1.1	\$20,000 and over <sup>2</sup>	23	60.5	1,884,984	91.6
\$20,000 to \$100,000	8	38.1	372,718	13.5					
\$100,000 and over <sup>2</sup>	6	28.6	2,342,244	84.9	MARBLE.				
ILLINOIS	15	100.0	1,329,389	100.0	VERMONT	15	100.0	2,108,872	100.0
Less than \$5,000	4	26.7	12,015	0.9	Less than \$20,000 <sup>1</sup>	4	26.7	86,531	1.7
\$5,000 to \$20,000	6	40.0	61,823	4.7	\$20,000 to \$100,000	7	46.7	352,875	16.7
\$20,000 and over <sup>2</sup>	5	33.3	1,255,551	94.4	\$100,000 and over <sup>2</sup>	4	26.7	1,719,466	81.5
WEST VIRGINIA	15	100.0	885,588	100.0	TENNESSEE	13	100.0	1,068,131	100.0
Less than \$5,000	5	33.3	15,228	1.7	Less than \$100,000 <sup>4</sup>	8	61.5	275,415	25.3
\$5,000 to \$20,000	4	26.7	45,473	5.1	\$100,000 to \$500,000	5	38.5	812,716	74.7
\$20,000 to \$100,000	3	20.0	132,015	14.9					
\$100,000 to \$500,000	3	20.0	692,872	78.2					

<sup>1</sup> Includes the group "Less than \$5,000."<sup>2</sup> Includes the group "\$1,000,000 to \$5,000,000."<sup>3</sup> Includes the groups "\$100,000 to \$500,000," and "\$500,000 to \$1,000,000."<sup>4</sup> Includes the group "\$5,000 to \$20,000."

Size of enterprises according to average number of wage earners.—Table 12 presents a classification of the producing enterprises, for all quarry industries combined and for each industry separately by states, according to the average number of wage earners per enterprise and shows the distribution of enterprises and wage earners for each class. For all stone industries in the United States combined, 3.2 per cent of the enterprises employed no wage earners; 92.4 per cent of the enterprises had fewer than 101 wage earners each but employed 67.4 per cent of the total average number of wage earners; only 79 enterprises, or 4.3 per cent of the total number, had more than 100 wage earners each and employed 32.6 per cent of the total average number of wage earners. A similar preponderance of small enterprises—those having less than 101 wage earners each—was characteristic of each of the stone industries. In the

limestone, basalt, and marble industries the largest number of enterprises was in the class having 6 to 20 wage earners; in the granite and sandstone industries the greatest number was in the class having 1 to 5 wage earners; and in the slate industry the greatest number was in the class having 21 to 50 wage earners. The larger enterprises, those employing more than 100 wage earners each, were mostly in the limestone and granite industries, although each of the other industries reported a few enterprises of this size. In the limestone industry Pennsylvania, Ohio, Indiana, West Virginia, Michigan, and Alabama reported the largest enterprises; in the granite industry, Vermont, Massachusetts, North Carolina, and Wisconsin; in the sandstone industry, Pennsylvania and Ohio; in the slate industry, Pennsylvania and Vermont; in the basalt industry, Pennsylvania, Connecticut, and New York; and in the marble industry, Vermont.

TABLE 12.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS: 1919.

INDUSTRY AND STATE.	TOTAL.		ENTERPRISES EMPLOYING—										PER CENT DISTRIBUTION.													
	Enterprises.	Wage earners (average number).	No wage earners.		1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 500 wage earners.		No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 500 wage earners.		
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.		Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	
ALL INDUSTRIES.	1,820	42,986	58	561	1,405	626	7,087	370	11,584	126	8,935	79	14,025	3.2	30.8	3.3	34.4	16.4	20.3	26.9	6.9	20.8	4.3	32.6		
Limestone	895	22,069	25	288	713	301	3,445	179	5,456	59	4,109	43	8,346	2.8	32.2	3.2	33.6	15.6	20.0	24.7	6.6	18.6	4.8	37.3		
Granite	358	8,049	20	119	288	117	1,178	60	1,832	23	2,035	14	2,691	5.6	33.2	3.6	32.7	14.6	16.8	28.1	7.8	25.3	3.9	33.4		
Sandstone	255	4,287	9	105	245	59	1,032	29	1,842	17	1,249	6	819	3.5	41.2	5.7	34.9	24.1	11.4	22.0	9.7	29.1	2.4	19.1		
Slate	101	3,513	1	1	32	32	353	39	1,291	14	1,005	6	330	1.0	8.9	0.9	31.7	10.1	38.6	38.7	13.9	28.6	5.9	23.6		
Basalt	163	3,336	2	36	115	67	783	47	1,532	2	390	5	547	1.2	23.1	3.4	41.1	23.4	28.8	45.0	2.7	11.7	3.1	16.4		
Marble	48	1,732	1	4	12	20	250	16	531	2	147	5	792	2.1	8.3	0.7	41.7	14.4	33.3	30.7	4.2	8.5	10.4	45.7		
<b>LIMESTONE.</b>																										
Pennsylvania	184	5,573	2	64	144	59	635	28	790	19	1,415	12	2,589	1.1	34.8	2.6	32.1	11.4	15.2	14.2	10.3	25.4	6.5	46.5		
Ohio	90	2,262	2	39	87	24	257	18	551	3	228	4	1,139	2.2	43.3	3.8	28.7	11.4	20.0	24.4	3.3	10.1	4.4	50.4		
Indiana	67	1,800	1	24	56	24	240	9	260	4	252	5	992	1.5	35.8	3.1	35.8	13.3	13.4	14.4	6.0	14.0	7.5	55.1		
New York	55	1,739	2	10	25	24	278	8	287	8	580	3	591	3.6	18.2	1.4	43.6	15.9	14.5	16.5	14.5	32.2	5.5	34.0		
Illinois	41	1,244	3	10	30	10	120	11	400	4	298	3	396	7.3	24.4	2.4	24.4	9.6	28.8	32.2	9.8	24.0	7.3	31.8		
Missouri	70	1,171	1	20	60	29	353	17	491	2	124	1	143	1.4	26.6	5.1	41.4	30.1	24.3	41.9	2.9	10.6	1.4	12.2		
West Virginia	17	1,003	1	3	8	2	15	4	118	3	223	4	639	5.9	17.6	0.8	11.8	1.5	23.5	11.6	17.6	22.2	23.5	63.7		
Alabama	15	835	3	3	8	2	38	6	207	1	52	3	532	20.0	1.0	13.3	4.3	40.0	24.8	6.7	6.2	20.0	63.7			
Virginia	31	777	10	27	8	114	8	239	3	192	2	205	32.3	3.3	3.5	25.8	14.7	25.8	30.8	9.7	24.7	6.5	26.4			
Kentucky	47	676	18	53	18	222	9	275	2	126	2	126	38.3	7.8	38.3	32.8	19.1	40.7	4.3	18.6	.....	.....	.....	.....		
Kansas	35	484	17	31	11	110	6	190	1	153	1	153	48.6	6.4	31.4	22.7	17.1	39.3	.....	.....	2.9	31.6	.....	.....		
Wisconsin	33	382	15	29	11	120	6	168	1	65	.....	.....	45.5	7.6	33.3	31.4	18.2	44.0	3.0	17.0	.....	.....	.....	.....		
Tennessee	21	349	3	2	11	163	7	184	.....	.....	.....	.....	14.3	0.6	52.4	46.7	32.3	52.7	.....	.....	.....	.....	.....	.....		
Oklahoma	13	278	1	2	5	5	57	4	115	.....	.....	.....	7.7	15.4	1.8	38.5	20.5	30.8	41.4	.....	.....	7.7	36.3			
New Jersey	10	258	1	5	5	62	3	113	1	78	.....	.....	10.0	1.9	50.0	24.0	30.0	43.8	10.0	30.2	.....	.....	.....	.....		
Iowa	25	245	1	9	20	13	137	1	31	1	58	.....	4.0	36.0	8.1	52.0	55.7	4.0	12.6	.....	4.0	23.6	.....	.....		
California	13	245	1	3	9	7	75	1	28	.....	.....	.....	7.7	23.1	3.7	53.8	30.6	7.7	11.4	.....	.....	7.7	54.3			
Colorado	14	228	3	4	15	4	36	1	34	2	143	.....	21.4	28.6	6.6	28.6	15.8	7.1	14.9	14.3	62.7	.....	.....	.....		
Minnesota	10	156	4	10	3	36	2	48	1	62	.....	.....	40.0	40.0	6.4	30.0	23.1	20.0	30.8	10.0	39.7	.....	.....	.....		
Maryland	11	149	8	31	1	16	1	49	1	53	.....	.....	72.7	20.8	9.1	10.7	9.1	32.9	9.1	35.6	.....	.....	.....	.....		
Utah	7	148	2	6	1	20	4	122	.....	.....	.....	.....	28.6	4.1	14.3	13.5	57.1	82.4	.....	.....	.....	.....	.....	.....		
Arkansas	6	114	1	5	3	46	2	63	.....	.....	.....	.....	16.7	4.4	50.0	40.4	33.3	55.3	.....	.....	.....	.....	.....	.....		
Florida	4	111	1	2	1	17	1	40	1	52	.....	.....	25.0	1.8	25.0	15.3	25.0	36.0	25.0	46.8	.....	.....	.....	.....		
Montana	7	87	2	2	3	30	2	55	.....	.....	.....	.....	28.6	2.3	42.9	34.5	28.6	63.2	.....	.....	.....	.....	.....	.....		
Georgia	5	80	1	1	3	44	1	35	.....	.....	.....	.....	20.0	1.2	60.0	55.0	20.0	43.8	.....	.....	.....	.....	.....	.....		
Oregon	4	69	1	4	1	7	2	58	.....	.....	.....	.....	25.0	6.8	25.0	10.1	50.0	84.1	.....	.....	.....	.....	.....	.....		
Arizona	4	45	2	1	1	14	1	31	.....	.....	.....	.....	50.0	25.0	25.0	31.1	25.0	68.9	.....	.....	.....	.....	.....	.....		
Vermont	4	40	1	5	2	12	1	23	.....	.....	.....	.....	25.0	12.5	50.0	30.0	25.0	57.5	.....	.....	.....	.....	.....	.....		
All other states <sup>1</sup>	52	1,530	5	12	33	15	175	15	451	2	128	3	733	9.6	23.1	2.2	28.8	11.5	28.8	29.7	3.8	8.4	5.8	48.2		
<b>GRANITE.</b>																										
Vermont	27	1,062	1	11	25	4	51	6	211	2	145	3	630	3.7	40.7	2.4	14.8	4.8	22.2	19.9	7.4	13.7	11.1	59.3		
Massachusetts	42	1,084	14	27	14	160	11	355	2	149	1	343	33.3	2.6	33.3	15.5	26.2	34.3	4.8	14.4	2.4	33.2	.....	.....		
North Carolina	16	959	1	4	8	2	36	5	154	2	182	2	629	6.2	25.0	0.8	12.5	3.8	31.2	16.1	12.5	13.8	12.5	65.6		
Wisconsin	14	753	4	13	3	82	1	22	3	243	3	443	28.6	1.7	21.4	4.2	7.1	2.9	21.4	32.3	21.4	58.8	.....	.....		
Maine	42	747	5	21	53	9	96	2	80	2	146	3	372	11.9	50.0	7.1	21.4	12.9	4.8	10.7	4.8	19.5	7.1	49.8		
New Hampshire	23	589	3	8	14	4	55	3	68	4	285	1	167	13.0	34.8	2.4	17.4	9.3	13.0	11.5	17.4	48.4	4.3	28.4		
Georgia	20	580	3	10	8	89	5	176	4	305	.....	.....	15.0	1.7	40.0	15.3	25.0	30.3	20.0	52.6	.....	.....	.....	.....		
Minnesota	27	392	1	9	24	9	77	6	157	2	184	.....	.....	3.7	33.3	6.1	33.3	19.6	22.2	40.1	7.4	34.2	.....	.....		
South Carolina	10	322	4	11	2	24	1	41	3	246	.....	.....	40.0	3.4	20.0	7.5	10.0	12.7	30.0	76.4	.....	.....	.....	.....		
Rhode Island	8	262	3	15	2	20	1	46	1	74	1	107	37.5	5.7	25.0	7.6	12.5	17.6	12.5	28.2	12.5	12.5	40.8	.....		
Maryland	9	235	1	4	4	62	3	102	1	67	.....	.....	11.1	1.7	44.4	26.4	33.3	43.4	11.1	28.5	.....	.....	.....	.....		
Pennsylvania	29	197	7	20	20	122	2	55	.....	.....	.....	.....	24.1	10.2	69.0	61.9	6.9	27.9	.....	.....	.....	.....	.....	.....		
California	17	162	3	5	7	64	3	91	.....	.....	.....	.....	17.6	29.4	4.3	35.3	39.5	17.6	58.2	.....	.....	.....	.....	.....		
Virginia	7	157	.....	.....	3	32	3	67	1	58	.....	.....	.....	.....	42.9	20.4	42.9	42.7	14.3	36.9	.....	.....	.....	.....		
New York	7	101	3	8	2	24	2	69	.....	.....	.....	.....	42.9	7.9	28.6	23.8	28.6	68.3	.....	.....	.....	.....	.....	.....		
Connecticut	11	92	3	6	7	62	1	24	.....	.....	.....	.....	27.3	6.5	63.6	67.4	9.1	26.1	.....	.....	.....	.....	.....	.....		
Arizona	3	58	1	4	.....	2	54	.....	.....	.....	.....	.....	33.3	6.9	.....	.....	66.7	93.1	.....	.....	.....	.....	.....	.....		
New Jersey	4	48	1	3	2	21	1	24	.....	.....	.....	.....	25.0	6.2	5											

TABLE 12.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS: 1919—Continued.

INDUSTRY AND STATE.	TOTAL.		ENTERPRISES EMPLOYING—										PER CENT DISTRIBUTION.												
	Enterprises.	Wage earners (average number).	No wage earners.		1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 500 wage earners.		No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 500 wage earners.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.		Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
<b>SLATE.</b>																									
Pennsylvania.....	42	1,892			11	117	20	669	7	521	4	585					26.2	6.2	47.6	35.4	16.7	27.5	9.5	30.9	
Vermont.....	38	1,039		6	23	15	176	12	378	3	217	3	245		15.8	2.2	39.5	16.9	31.6	30.4	7.9	20.9	5.3	23.6	
Virginia.....	4	210							82		123								50.0	39.0	50.0	61.0			
New York.....	9	134		3	9	3	26	3	99						33.3	6.7	33.3	19.4	33.3	73.9					
Maryland.....	4	85				2	22	2	63										50.0	25.9	50.0	74.1			
All other states <sup>1</sup> .....	4	153		1		1	14			2	139			25.0							50.0	90.8			
<b>BASALT.</b>																									
Pennsylvania.....	29	721		7	13	11	93	7	230	1	55	3	330		24.1	1.8	37.9	12.9	24.1	31.9	3.5	7.6	10.3	45.8	
New Jersey.....	36	637		10	41	16	185	8	288	2	123				27.8	6.4	44.4	29.0	32.2	45.2	5.6	19.3			
Massachusetts.....	21	547		2	6	9	126	8	260	2	156				9.5	1.1	42.9	23.0	38.1	47.5	9.5	28.3			
Connecticut.....	20	363		3	7	10	119	5	133			1	104	5.0	15.0	1.9	50.0	32.8	25.0	36.6			5.0	28.7	
California.....	16	262		5	13	5	60	6	189						31.2	5.0	31.2	22.9	37.5	72.1					
Maryland.....	10	183		2	8	5	70	3	99						20.0	4.4	50.0	41.5	30.0	54.1					
Oregon.....	9	124		2	9	5	56	2	50						22.2	7.3	55.6	45.2	22.2	47.6					
Washington.....	8	99		3	10	3	32			1	57			12.5	37.5	10.1	37.5	32.3			12.6	57.6			
All other states <sup>2</sup> .....	14	400		2	8	3	35	3	244			1	113		14.3	2.0	21.4	8.8	57.1	61.0			7.1	28.2	
<b>MARBLE.</b>																									
Vermont.....	15	570		2	3	6	71	5	153			2	343		13.3	0.5	40.0	12.5	33.3	26.8			13.3	60.2	
Tennessee.....	13	540				5	66	5	179	2	147	1	148		38.5	12.2	38.5	33.1	15.4	27.2			7.7	27.4	
New York.....	6	100				5	65	1	35						83.3	65.0	16.7	35.0					14.3	57.7	
All other states <sup>3</sup> .....	14	522		2	9	4	48	5	164			2	301	7.1	14.3	1.7	28.6	9.2	35.7	31.4					

<sup>1</sup> Includes enterprises in states as follows: Maine, 3; Utah, 1.

<sup>2</sup> Includes enterprises in states as follows: Delaware, 1; Idaho, 1; Michigan, 1; New York, 4; Rhode Island, 4; Texas, 1; Wisconsin, 2.

<sup>3</sup> Includes enterprises in states as follows: Alabama, 2; California, 3; Georgia, 1; Maryland, 2; Massachusetts, 3; Michigan, 1; Missouri, 1; Texas, 1.

Size of enterprises according to acreage of mineral land.—Table 13 shows producing enterprises, in the combined quarry industries and in each industry separately, classified according to the number of acres of quarry land operated, and gives the number of acres of land and the number of quarries operated in each class, together with the per cent distribution

for enterprises and mineral land. The largest number of enterprises for the quarry industries as a whole was in the class operating from 1 to 50 acres. Large holdings of quarry lands are exceptional in the stone industries, but the very few enterprises which had extensive holdings—500 acres or more—reported more than half of the total acreage of all quarry land.

TABLE 13.—SIZE OF PRODUCING ENTERPRISES, BY NUMBER OF ACRES OF MINERAL LAND OPERATED: 1919.

INDUSTRY AND ACRES PER ENTERPRISE.	ENTERPRISES.			MINERAL LAND OPERATED.		INDUSTRY AND ACRES PER ENTERPRISE.	ENTERPRISES.			MINERAL LAND OPERATED.	
	Number.	Per cent distribution.	Number of quarries.	Acres.	Per cent distribution.		Number.	Per cent distribution.	Number of quarries.	Acres.	Per cent distribution.
ALL INDUSTRIES.....	1,820	100.0	1,922	252,242	100.0	BASALT.....	163	100.0	174	15,625	100.0
1 to 50.....	1,297	71.3	1,382	18,271	7.2	1 to 50.....	119	73.0	123	1,680	10.8
50 to 100.....	182	10.0	194	13,824	5.5	50 to 100.....	19	11.7	21	1,386	8.9
100 to 200.....	163	9.0	180	24,381	9.7	100 to 200.....	13	8.0	15	1,947	12.5
200 to 500.....	102	5.6	121	32,299	12.8	200 to 500.....	9	5.5	12	2,912	18.6
500 to 1,000.....	37	2.0	39	27,074	10.7	Over 1,000.....	3	1.8	3	7,700	49.3
Over 1,000.....	39	2.1	53	136,393	54.1	SLATE.....	101	100.0	104	5,440	100.0
LIMESTONE.....	895	100.0	925	122,820	100.0	1 to 50.....	83	82.2	84	1,334	24.5
1 to 50.....	627	70.1	636	8,858	7.2	50 to 100.....	4	4.0	4	810	5.7
50 to 100.....	85	9.5	88	6,491	5.3	100 to 200.....	9	8.9	10	1,408	25.9
100 to 200.....	87	9.7	92	13,242	10.8	200 to 500.....	2	2.0	2	476	8.7
200 to 500.....	57	6.4	68	18,384	15.0	500 to 1,000.....	3	3.0	4	1,913	35.2
500 to 1,000.....	22	2.5	23	16,277	13.3	MARBLE.....	48	100.0	62	28,960	100.0
Over 1,000.....	17	1.9	20	59,668	48.5	1 to 50.....	27	56.2	27	520	1.8
GRANITE.....	358	100.0	381	30,859	100.0	50 to 100.....	3	6.2	3	194	0.7
1 to 50.....	271	75.7	278	3,714	12.1	100 to 200.....	7	14.6	8	991	3.4
50 to 100.....	41	11.5	44	3,184	10.4	200 to 500.....	2	4.2	2	730	2.5
100 to 200.....	22	6.1	25	3,138	10.2	500 to 1,000.....	3	6.2	3	2,330	8.0
200 to 500.....	17	4.7	27	5,145	16.8	Over 1,000.....	6	12.5	16	24,204	83.6
500 to 1,000.....	2	0.6	2	1,473	4.8						
Over 1,000.....	5	1.4	5	14,000	45.7						
SANDSTONE.....	255	100.0	276	48,729	100.0						
1 to 50.....	170	66.7	184	2,165	4.4						
50 to 100.....	30	11.8	34	2,259	4.6						
100 to 200.....	25	9.8	27	3,655	7.5						
200 to 500.....	15	5.9	15	4,653	9.5						
500 to 1,000.....	7	2.7	7	5,076	10.4						
Over 1,000.....	8	3.1	9	30,921	63.5						

**PERSONS ENGAGED IN THE INDUSTRIES.**

Persons according to class and sex.—Table 14 shows the persons engaged in the stone-quarrying industries by classes, gives the number of males and females in each class, and also the per cent distribution of the three principal classes. Females constituted only 1.1 per cent of the total of all classes of persons engaged, and were employed principally as clerks and other subordinate salaried employees. They numbered more than one-fourth of all the employees in this grade in the stone industries as a whole. The number of proprietors and officials, including the sal-

aried employees of the higher grades, was 7.3 per cent of the total number of persons for all stone industries, and the proportion for the separate industries ranged from 5.1 per cent to 8.9 per cent. The number of clerks and other subordinate salaried employees was 3.3 per cent of the total number of persons engaged in all the stone industries and the proportion for the separate industries ranged from 1.8 to 3.8 per cent. Wage earners constituted 89.4 per cent of the total number of persons in all stone industries and the proportion ranged from 87.5 per cent in the sandstone industry to 91.6 per cent in the marble industry.

TABLE 14.—PERSONS ENGAGED, PRODUCING ENTERPRISES: 1919.

	All industries.	Limestone.	Granite.	Sandstone.	Basalt.	Slate.	Marble.
All classes.....	48,087	24,705	8,951	4,897	3,791	3,852	1,891
Male.....	47,566	24,452	8,866	4,813	3,742	3,823	1,865
Female.....	521	253	85	79	49	29	26
Proprietors and officials.....	3,532	1,727	696	434	310	289	96
Per cent of all classes.....	7.3	7.0	7.8	8.9	8.2	7.0	5.1
Male.....	3,459	1,691	685	413	305	285	95
Female.....	73	36	11	16	5	4	1
Proprietors and firm members.....	1,288	633	328	179	77	64	7
Male.....	1,249	612	331	172	75	62	7
Female.....	39	21	7	7	2	2	.....
Salaried officers of corporation.....	833	375	137	106	85	84	46
Male.....	804	360	133	102	82	82	45
Female.....	29	15	4	4	3	2	1
Superintendents and managers.....	1,307	672	197	143	138	117	40
Male.....	1,302	672	197	138	138	117	40
Female.....	5	.....	.....	5	.....	.....	.....
Technical employees.....	104	47	34	6	10	4	3
Male.....	104	47	34	6	10	4	3
Female.....	.....	.....	.....	.....	.....	.....	.....
Clerks and other subordinate salaried employees.....	1,569	909	206	176	145	70	63
Per cent of all classes.....	3.3	3.7	2.3	3.6	3.8	1.8	3.3
Male.....	1,135	701	138	115	108	45	38
Female.....	434	208	73	61	42	25	25
Wage earners (average number).....	42,986	22,069	8,049	4,287	3,336	3,513	1,732
Per cent of all classes.....	89.4	89.3	89.9	87.5	88.0	91.2	91.6
Male <sup>1</sup> .....	42,972	22,060	8,048	4,285	3,334	3,513	1,732
Female <sup>1</sup> .....	14	9	1	2	2	.....	.....

<sup>1</sup> Segregation based on the ratio between male and female wage earners reported for the representative day.

Proprietors performing manual labor.—Table 15 gives for all the stone industries in the United States, as a whole, and for each industry separately the total number of proprietors and firm members and the number and percentages of these performing manual labor. Enterprises of the size and type operated without the assistance of hired help or with little help appear from the facts brought out by this table to be fairly numerous and especially so in the granite industry. Out of a total of 1,288 proprietors and firm members, 417, or nearly one-third, were personally performing manual labor in or about their quarries.

TABLE 15.—PROPRIETORS AND FIRM MEMBERS, PRODUCING ENTERPRISES: 1919.

INDUSTRY.	Total.	PERFORMING MANUAL LABOR.	
		Number.	Per cent of total.
All industries.....	1,288	417	32.4
Limestone.....	633	175	27.6
Granite.....	328	145	44.2
Sandstone.....	179	53	29.6
Basalt.....	77	20	26.0
Slate.....	64	21	32.8
Marble.....	7	3	42.9

The number of proprietors and firm members working in all stone industries was equivalent to less than 1 per cent of the total average number of wage earners.

Wage earners, by occupations.—Table 16 presents for the combined quarrying industries, and for each industry separately, the number of wage earners employed on a representative day, classified according to occupation, gives the number in each class employed above and below ground, and shows the per cent of the total in each occupational class. The table distinguishes between men engaged in the more peculiarly quarrying occupations; men engaged in other skilled trades such as enginemen, hoistmen, firemen, machinists, electricians, carpenters, and other mechanics; and less skilled and unclassified laborers. Wage earners in open-pit quarries were classed as employed above ground except as noted in the "Introduction" to this report. Wage earners classified as employed below ground numbered 1,511, or only 3.1 per cent of the total number of wage earners of all classes and in all the stone industries on a representative day. These were in the limestone industry, constituting 3.1 per cent of all the wage earners in that industry, and in the slate industry where they consti-



tuted 18.4 per cent of the wage earners. Of the total number of wage earners reported for all industries combined, 89.3 per cent were employed in actual quarrying operations, and 10.7 per cent in mills and dressing plants. In the limestone and basalt industries the proportion in mills and dressing plants was small, being 3.8 per cent and 1.1 per cent, respectively. In the sandstone industry the proportion was larger,

15.1 per cent, and in the granite, slate, and marble industries the percentages in mills and dressing plants were, respectively, 22.1, 23.5, and 28.5. These ratios are in accord with the data in Table 1, which indicates that for granite, marble, and slate a considerable part of the output was for uses requiring cutting, dressing, or other preparation.

TABLE 16.—WAGE EARNERS, BY OCCUPATIONS, DECEMBER 15 OR NEAREST REPRESENTATIVE DAY, PRODUCING ENTERPRISES: 1919.

CLASS OF WAGE EARNER.	ALL INDUSTRIES.		LIMESTONE.		GRANITE.		SANDSTONE.		SLATE.		BASALT.		MARBLE.	
	Number of wage earners.	Per cent distribution.	Number of wage earners.	Per cent distribution.	Number of wage earners.	Per cent distribution.	Number of wage earners.	Per cent distribution.	Number of wage earners.	Per cent distribution.	Number of wage earners.	Per cent distribution.	Number of wage earners.	Per cent distribution.
All classes.....	48,707	100.0	25,052	100.0	9,166	100.0	4,861	100.0	3,973	100.0	3,799	100.0	1,856	100.0
Above ground, total.....	47,196	96.9	24,272	96.9	9,166	100.0	4,861	100.0	3,242	81.6	3,799	100.0	1,856	100.0
Foremen, bosses, etc.....	1,876	3.9	957	3.8	379	4.1	197	4.1	133	3.4	144	3.8	66	3.6
Enginemen, hoistmen, firemen, mechanics, etc.....	5,535	11.4	2,273	13.1	858	9.4	406	8.3	371	9.3	473	12.5	150	8.1
Quarrymen, drillmen, and their helpers.....	16,462	33.8	8,438	33.7	3,736	40.8	1,599	32.9	811	20.4	1,120	29.5	763	41.1
Trackmen and men engaged in hauling, tramming, etc.....	3,211	6.6	1,930	7.7	544	5.9	304	6.3	200	5.0	192	5.1	41	2.2
Muckers, loaders, laborers, and others not classified.....	14,885	30.6	8,716	34.8	1,621	17.7	1,621	33.3	792	19.9	1,828	48.1	307	16.5
Wage earners employed in mills and dressing plants.....	5,227	10.7	958	3.8	2,028	22.1	735	15.1	935	23.5	42	1.1	529	28.5
Below ground, total.....	1,511	3.1	780	3.1					731	18.4				
Foremen, bosses, etc.....	46	0.1	10						36	0.9				
Enginemen, firemen, mechanics, etc.....	56	0.1	53	0.2					3	0.1				
Quarrymen, drillmen, and their helpers.....	692	1.4	204	0.8					488	12.3				
Trackmen and men engaged in hauling, tramming, etc.....	158	0.3	104	0.4					54	1.4				
Muckers, loaders, laborers, and others not classified.....	559	1.1	409	1.6					150	3.8				

Wage earners, by months.—Table 17 shows for each of the stone industries, by states, the number of wage earners employed on the 15th day of each month or the nearest representative day, the average number employed during the year, the months of maximum and minimum employment, and the ratio of the minimum to the maximum number. The changes in the number employed from month to month reflect conditions prevailing in the stone-quarrying industries during the census year. The month of maximum employment for the combined stone industries was August, and the month of minimum employment was Febru-

ary, the minimum number employed being two-thirds of the maximum number. The industries are very largely seasonal, not only because of winter's direct interference with quarry operation but also because of lessened demand in winter for structural and paving materials. Except in the slate industry, the figures apparently indicate normal conditions. In the slate industry the numbers employed in the last three months were larger than the average for the summer months because of recovery from the very subnormal conditions which prevailed earlier in the year 1919.

TABLE 17.—WAGE EARNERS, BY MONTHS, PRODUCING ENTERPRISES: 1919.

[The month of maximum employment for each industry and state is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

INDUSTRY AND STATE.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
UNITED STATES—All industries.....	42,986	33,573	<b>32,990</b>	36,189	41,735	45,061	46,563	48,013	<b>48,378</b>	48,553	47,240	45,242	41,295	66.8
Limestone.....	22,009	18,065	<b>17,398</b>	18,847	21,476	22,992	23,667	24,599	<b>25,455</b>	25,303	23,901	22,538	20,367	67.8
Granite.....	8,049	<i>5,669</i>	<b>5,844</b>	6,504	7,771	8,620	8,945	9,071	<b>9,333</b>	9,024	9,101	8,741	8,070	61.4
Sandstone.....	4,287	3,471	<b>3,305</b>	3,681	4,128	4,411	4,533	4,667	<b>4,961</b>	4,916	4,726	4,598	4,047	66.6
Basalt.....	3,336	<i>2,037</i>	<b>2,037</b>	2,456	3,257	3,680	3,828	3,985	<b>4,097</b>	3,906	3,908	3,710	3,131	49.7
Slate.....	3,513	<i>2,852</i>	<b>2,909</b>	3,060	3,415	3,580	3,764	3,858	<b>3,572</b>	3,594	3,729	3,896	<b>3,987</b>	72.6
Marble.....	1,732	<i>1,459</i>	<b>1,497</b>	1,641	1,688	1,778	1,826	1,833	<b>1,865</b>	1,810	1,875	1,759	1,758	77.8
LIMESTONE.														
Alabama.....	835	808	<b>893</b>	832	853	798	744	730	845	<b>904</b>	861	874	878	80.8
Arizona.....	45	78	<b>54</b>	51	32	42	36	41	42	47	44	45	48	35.9
Arkansas.....	114	73	<b>80</b>	92	96	122	128	131	138	140	131	116	121	52.1
California.....	245	<b>263</b>	240	226	250	253	242	228	237	<b>245</b>	228	261	257	79.5
Colorado.....	228	<b>337</b>	303	274	276	257	268	273	277	243	228	228	78	22.3

TABLE 17.—WAGE EARNERS, BY MONTHS, PRODUCING ENTERPRISES: 1919—Continued.

INDUSTRY AND STATE.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>LIMESTONE—continued.</b>														
Florida.....	111	110	108	123	119	122	113	108	106	102	105	115	102	83.6
Georgia.....	80	94	95	90	93	65	93	86	71	63	61	67	82	64.2
Illinois.....	1,244	834	810	1,064	1,279	1,488	1,389	1,461	1,438	1,452	1,401	1,334	988	54.4
Indiana.....	1,800	940	915	1,107	1,583	1,817	2,046	2,249	2,419	2,363	2,170	1,989	2,002	37.8
Iowa.....	246	109	132	166	230	287	263	300	336	348	333	303	160	31.8
Kansas.....	484	416	415	451	532	607	637	508	471	509	536	447	361	44.1
Kentucky.....	676	545	351	468	637	734	773	885	903	879	788	716	553	38.2
Maryland.....	149	180	122	106	144	167	166	173	193	170	153	151	115	54.7
Minnesota.....	156	52	53	105	159	190	217	198	203	201	185	166	143	24.0
Missouri.....	1,171	912	890	926	1,071	1,182	1,211	1,305	1,404	1,414	1,377	1,287	1,137	58.4
Montana.....	87	81	70	83	89	95	115	100	94	83	82	83	69	60.0
New Jersey.....	258	289	288	276	237	222	236	242	258	255	266	253	264	74.2
New York.....	1,739	1,356	1,184	1,409	1,764	2,032	1,955	2,085	2,111	1,989	1,901	1,659	1,423	56.7
Ohio.....	2,262	2,173	1,873	1,902	1,986	2,166	2,415	2,564	2,689	2,569	2,458	2,314	2,060	70.6
Oklahoma.....	278	252	263	290	230	239	228	217	281	367	281	277	282	55.5
Oregon.....	69	40	36	21	19	43	55	75	86	77	119	115	143	13.4
Tennessee.....	5,573	5,135	5,061	5,254	5,336	5,237	5,701	5,873	6,181	6,111	5,910	5,691	5,396	81.7
Texas.....	949	311	316	380	347	356	334	354	378	376	372	301	380	79.2
Utah.....	148	158	142	164	156	146	144	158	152	166	112	149	129	67.5
Vermont.....	40	40	34	39	36	61	48	41	38	41	35	39	38	45.9
Virginia.....	777	650	611	637	818	888	809	885	962	878	837	762	683	68.5
West Virginia.....	1,003	907	912	1,014	1,039	1,054	994	1,022	1,095	1,063	980	992	964	82.8
Wisconsin.....	382	178	187	232	409	487	509	517	501	477	444	377	266	34.4
All other states.....	1,520	394	1,006	1,088	1,606	1,831	1,778	1,792	1,767	1,776	1,664	1,621	1,317	54.3
<b>GRANITE.</b>														
Arizona.....	58	98	96	112	112	80	28	26	26	26	28	28	36	23.2
California.....	162	146	140	136	141	140	154	142	136	171	201	210	247	54.3
Connecticut.....	92	79	67	68	89	108	111	108	97	94	94	95	94	60.4
Georgia.....	680	441	478	534	547	597	608	651	710	657	604	560	573	62.1
Maine.....	747	261	244	500	763	1,008	1,044	933	951	584	870	833	683	23.4
Maryland.....	235	125	129	154	224	292	280	304	314	303	285	235	182	38.9
Massachusetts.....	1,034	643	656	743	1,056	1,161	1,198	1,212	1,201	1,117	1,201	1,174	1,067	52.4
Minnesota.....	392	353	353	351	351	378	387	413	422	437	444	444	422	75.0
Montana.....	4			4	4	6	7	7	8	6	6	6	6	25.0
New Hampshire.....	599	260	271	302	479	624	739	747	779	763	780	726	598	33.3
New Jersey.....	48	27	28	51	48	48	35	35	37	37	81	79	72	33.3
New York.....	101	29	26	31	65	126	146	149	158	155	148	104	75	16.5
North Carolina.....	959	845	890	904	936	982	946	963	979	1,028	1,028	1,016	988	82.2
Pennsylvania.....	197	130	129	141	181	214	235	261	251	213	203	208	198	49.4
Rhode Island.....	262	182	202	209	235	272	275	304	302	316	278	237	272	60.8
South Carolina.....	322	307	301	302	311	315	294	320	346	343	324	331	350	83.8
Vermont.....	1,062	355	307	392	1,008	1,060	1,171	1,171	1,188	1,132	1,170	1,098	1,100	72.2
Virginia.....	157	84	90	139	173	188	186	179	188	178	175	162	147	44.7
Washington.....	42	39	49	40	48	43	37	41	51	42	41	39	34	66.7
Wisconsin.....	753	583	608	622	767	778	833	849	821	860	854	809	632	67.8
All other states.....	253	204	208	213	239	255	251	256	277	279	296	281	278	69.2
<b>SANDSTONE.</b>														
California.....	27	14	16	28	20	24	22	39	53	27	28	26	27	26.4
Colorado.....	14	5	5	8	15	15	15	15	18	31	22	15	4	12.9
Illinois.....	288	307	284	269	247	269	276	283	284	297	327	328	285	75.3
Kentucky.....	56	6	23	51	64	70	67	74	69	82	67	57	43	6.1
New Jersey.....	20	7	7	7	30	29	29	29	29	29	22	11	11	23.3
New York.....	146	40	55	82	127	174	185	191	205	211	206	188	88	19.0
Ohio.....	875	701	687	786	900	1,008	971	965	970	977	903	863	789	68.2
Pennsylvania.....	1,673	1,413	1,468	1,404	1,551	1,650	1,780	1,859	1,948	1,877	1,871	1,815	1,646	65.3
South Dakota.....	89	40	43	42	65	76	89	122	141	121	111	127	91	28.4
West Virginia.....	343	325	391	304	294	343	351	330	396	389	357	379	358	73.7
Wisconsin.....	133	60	73	121	131	144	158	163	181	168	151	131	111	33.1
All other states.....	623	454	554	599	684	609	590	592	674	707	661	658	594	78.4
<b>BSALT.</b>														
California.....	262	189	155	229	268	270	249	271	294	283	308	327	301	47.4
Connecticut.....	363	281	277	338	350	380	396	406	405	377	393	395	366	68.2
Maryland.....	183	69	94	96	225	228	240	243	239	216	212	206	119	27.7
Massachusetts.....	547	305	287	366	578	569	613	640	688	708	677	607	496	40.5
New Jersey.....	637	359	352	385	578	750	796	806	779	779	764	715	579	43.6
Oregon.....	124	58	69	70	88	101	108	147	207	214	190	137	99	27.1
Pennsylvania.....	721	499	501	616	755	863	860	833	812	781	763	728	642	57.9
Washington.....	99	55	53	38	36	50	98	134	167	108	168	166	135	19.6
All other states.....	400	222	269	318	379	440	469	508	506	440	433	429	392	43.9
<b>SLATE.</b>														
Maryland.....	85	92	98	98	80	69	79	91	89	84	82	81	77	70.4
New York.....	134	86	78	66	101	122	127	137	160	164	177	191	200	32.5
Pennsylvania.....	1,962	1,373	1,455	1,562	1,865	1,949	2,013	2,070	2,058	2,064	2,106	2,063	2,076	65.2
Vermont.....	1,039	983	976	981	1,039	1,099	1,162	1,180	871	885	976	1,149	1,167	78.8
Virginia.....	210	182	166	189	195	202	224	226	237	224	223	226	226	68.4
All other states.....	153	156	136	135	154	139	149	154	157	163	165	166	181	74.6
<b>MARBLE.</b>														
New York.....	100	61	68	78	76	77	123	128	126	125	125	118	108	39.8
Tennessee.....	540	467	422	502	520	553	568	586	563	564	581	546	568	78.8
Vermont.....	570	508	530	566	585	614	601	572	579	588	600	561	538	82.4
All other states.....	522	436	437	500	507	534	534	547	566	533	569	534	539	73.1

It will be noted that the number of wage earners reported for all enterprises on a representative day, which is presented in several tables, aggregated 48,707, and differs considerably from the number shown for any month in Table 17. The representative day and month selected for reporting wage earners in detail varied with the individual enterprise. Therefore, the aggregate for the representative day differs from the total of the numbers reported by the several enterprises in any month.

Prevailing hours of labor.—Table 18 shows, for all stone industries and for each separately for selected states, the number of enterprises and number of wage earners classified according to the prevailing hours of labor per week reported by each enterprise. For the

combined quarrying industries and for limestone, sandstone, slate, basalt, and marble the hours prevailing for a majority of the enterprises were 54 to 62 per week. These hours were those for 69.8 per cent of all the wage earners in the quarrying industries. For the five industries separately considered the proportion of wage earners working 54 to 62 hours were as follows: Limestone, 81.3 per cent; sandstone, 86 per cent; slate, 61.8; basalt, 77.5; marble, 96.2. The hours per day in these industries were most commonly 10 and the 6-day week was the rule. In the granite industry a majority of the enterprises and 60 per cent of the wage earners were in the class reporting working hours as 44 to 53 per week. The 8-hour day and 6-day week prevailed in the granite industry.

TABLE 18.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR: 1919.

INDUSTRY AND STATE.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 and over.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
UNITED STATES—All industries.....	1,762	42,986	8	120	55	1,565	511	10,827	1,171	29,992	17	432
Limestone.....	870	22,069	3	57	8	24	187	3,774	663	17,934	9	280
Granite.....	338	8,049	4	43	32	1,195	209	4,829	91	1,048	2	34
Sandstone.....	246	4,287			3	8	49	483	191	3,688	3	108
Slate.....	100	3,513			11	335	14	963	73	2,170	2	45
Basalt.....	161	3,336	1	20	1	3	49	728	110	2,585		
Marble.....	47	1,732					3	50	43	1,667	1	15
LIMESTONE.												
Pennsylvania.....	182	5,573			2	3	22	308	157	5,257	1	5
Ohio.....	88	2,262			2	3	6	467	80	1,792		
Indiana.....	66	1,800					14	682	52	1,118		
New York.....	53	1,739	1	6			11	238	41	1,495		
Illinois.....	38	1,244					7	75	31	1,169		
Missouri.....	69	1,171					22	330	46	698	1	143
West Virginia.....	16	1,003							16	1,003		
Alabama.....	15	835					7	367	8	468		
Virginia.....	31	777					4	62	27	715		
Kentucky.....	47	676	1	43	1	4	4	75	41	554		
Kansas.....	35	484			1	1	22	133	12	350		
Wisconsin.....	33	382					5	40	23	342		
Tennessee.....	21	349	1	8	1	8	7	124	11	176	1	33
Oklahoma.....	12	278					4	51	8	227		
New Jersey.....	10	258					5	114	5	144		
Iowa.....	24	246					5	36	19	210		
California.....	12	245					2	9	2	231	1	5
Colorado.....	11	228					8	183	3	45		
All other states.....	107	2,519			1	5	32	490	69	1,940	5	94
GRANITE.												
Vermont.....	26	1,062			26	1,062						
Massachusetts.....	42	1,034	1	12			34	926	7	96		
North Carolina.....	15	959			3	43	4	423	8	493		
Wisconsin.....	14	753					8	317	6	436		
Maine.....	37	747	1	3	1	11	33	729	2	4		
New Hampshire.....	20	589	1	23			17	564	2	2		
Georgia.....	20	580					14	454	6	126		
Minnesota.....	26	392					23	346	2	16	1	30
South Carolina.....	10	322			1	77	3	174	6	71		
Rhode Island.....	8	262	1	5			6	247	1	10		
Maryland.....	9	235					3	55	6	180		
Pennsylvania.....	29	197			1	2	8	80	19	111	1	4
California.....	14	162					12	141	2	21		
Virginia.....	7	157					1	11	6	146		
New York.....	7	101					4	32	3	69		
Connecticut.....	11	92					10	86	1	6		
Arizona.....	3	58					3	58				
All other states.....	40	347					26	186	14	161		
SANDSTONE.												
Pennsylvania.....	98	1,673					13	209	84	1,448	1	16
Ohio.....	21	875					4	11	16	791	1	73
West Virginia.....	15	343			1	1	2	25	12	317		
Illinois.....	15	288					5	41	10	247		
New York.....	20	146					5	15	14	112	1	19
Wisconsin.....	12	133					2	24	10	109		
South Dakota.....	5	89					1	3	4	86		
Kentucky.....	5	56							5	56		

TABLE 18.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR: 1919—Continued.

INDUSTRY AND STATE.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—									
	Enter-prises.	Wage earners.	35 and under.		36 to 43.		44 to 53.		54 to 62.		63 and over.	
			Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.	Enter-prises.	Wage earners.
SANDSTONE—continued.												
California.....	5	27					3	10	2	17		
New Jersey.....	5	20						5	20			
Colorado.....	5	14					4	8	1	6		
All other states.....	40	623			2	7	10	137	28	479		
SLATE.												
Pennsylvania.....	42	1,802					12	949	28	898	2	45
Vermont.....	38	1,039			11	335			27	704		
Virginia.....	4	210						4	210			
New York.....	9	134					2	14	7	120		
Maryland.....	4	85						4	85			
All other states.....	3	153						3	153			
BASALT.												
Pennsylvania.....	29	721					4	78	25	643		
New Jersey.....	36	637					10	133	26	504		
Massachusetts.....	21	547					6	75	15	472		
Connecticut.....	19	363							19	363		
California.....	16	262					9	143	7	119		
Maryland.....	10	183	1	20	1	3	3	58	5	102		
Oregon.....	9	124					7	107	2	17		
Washington.....	7	99					7	99				
All other states.....	14	400					3	35	11	365		
MARBLE.												
Vermont.....	15	570							15	570		
Tennessee.....	13	540							13	540		
New York.....	6	100					1	11	5	89		
All other states.....	13	522					2	39	10	468	1	15

<sup>1</sup> Exclusive of 58 enterprises employing no wage earners in industries as follows: Limestone, 25; granite, 20; sandstone, 9; basalt, 2; slate, 1; marble, 1.

## LAND TENURE.

In the tables relating to acreage the number of acres of mineral land controlled by the mining enterprises is greater than the number of acres reported operated by the amount of acreage leased to other operators and by the idle acreage. "Acres operated" is exclusive of the duplication in "Acres controlled" of acreage reported by both owners and lessees.

Table 19 shows, for the stone-quarrying industries, the number of acres of land controlled by producing enterprises. The table distinguishes mineral land, that is, quarry land or land held for its supply of stone, from timber and other lands, shows the mineral land classified according to the form of tenure, and gives the number of acres operated. The table shows that 65.3 per cent of all the quarry or mineral land controlled was owned by the operating enterprises. In the limestone, granite, sandstone, and slate industries more than two-thirds of the quarry lands were owned by the operators, but in the basalt and marble industry less than one-half was so owned.

TABLE 19.—LAND OPERATED AND CONTROLLED, PRODUCING ENTERPRISES: 1919.

INDUSTRY.	Mineral land operated (acres).	Aggregate.	LAND CONTROLLED (ACRES).					Timber and other lands.
			Mineral land.				Timber and other lands.	
			Total.	Owned.	Held under lease.	Per cent owned.		
All industries.....	252,242	331,544	253,975	165,872	68,108	65.3	77,569	
Limestone.....	122,820	175,986	123,023	84,717	38,306	68.9	52,963	
Granite.....	30,659	37,747	30,749	23,799	6,950	77.4	6,998	
Sandstone.....	48,729	56,802	50,161	34,726	15,435	69.2	6,641	
Basalt.....	15,625	17,514	15,625	7,139	8,486	45.7	1,839	
Slate.....	5,440	8,245	5,440	3,673	1,767	67.5	2,905	
Marble.....	28,969	35,250	28,977	11,818	17,159	40.8	6,273	

Table 20 presents for the United States as a whole and by geographic divisions the enterprises in each stone industry, classified according to tenure of quarry (mineral) land—whether held by ownership, under lease, or held partly by ownership and partly under lease. The table also shows the per cent the total owned acreage is of the aggregate acreage of mineral land and also the per cent which the land under each class of tenure is of the aggregate.

TABLE 20.—NUMBER OF PRODUCING ENTERPRISES AND ACRES OF MINERAL LAND CONTROLLED, CLASSIFIED ACCORDING TO FORM OF TENURE: 1919.

INDUSTRY AND DIVISION.	ALL CLASSES.				ENTERPRISES OPERATING ONLY OWNED LAND.			ENTERPRISES OPERATING ONLY LAND HELD UNDER LEASE.			ENTERPRISES OPERATING LAND PARTLY OWNED AND PARTLY HELD UNDER LEASE.					
	Number of enterprises.	Acres controlled.				Number of enterprises.	Acres controlled.		Number of enterprises.	Acres controlled.		Number of enterprises.	Acres controlled.			
		Aggregate.	By ownership.	By lease.	Per cent owned is of aggregate.		By ownership.	Per cent of aggregate.		By lease.	Per cent of aggregate.		Total.	By ownership.	By lease.	Per cent of aggregate.
UNITED STATES—All industries.....	1,820	253,975	165,872	88,103	65.3	1,099	155,063	61.0	639	70,190	27.6	82	28,722	10,809	17,913	11.3
LIMESTONE.....	895	123,023	84,717	38,306	68.9	563	78,826	64.1	297	25,016	21.1	35	18,281	5,891	12,390	14.9
New England.....	7	99	87	12	87.9	6	87	87.9	1	12	12.1	.....	.....	.....	.....	.....
Middle Atlantic.....	249	36,942	11,536	25,406	31.2	132	10,615	28.7	109	14,791	40.0	8	11,536	921	10,615	31.2
East North Central.....	242	45,445	43,350	2,095	95.4	176	39,270	86.4	57	1,753	3.9	9	4,422	4,080	342	9.7
West North Central.....	151	4,839	3,325	1,514	68.7	92	3,089	63.4	52	1,202	34.8	7	568	312	256	11.7
South Atlantic.....	70	6,778	4,147	2,631	61.2	38	4,133	61.0	30	2,369	50.0	2	276	14	262	4.1
East South Central.....	83	6,749	6,184	565	91.6	64	5,853	88.7	15	884	5.7	4	512	331	181	7.6
West South Central.....	32	6,023	4,441	1,582	73.7	15	4,431	73.6	16	1,422	23.6	1	170	10	160	2.8
Mountain.....	44	11,124	9,541	1,583	85.8	29	9,321	83.8	12	1,285	11.6	3	518	220	298	4.7
Pacific.....	17	5,024	2,106	2,918	41.9	11	2,047	40.7	5	2,698	53.7	1	279	59	220	5.6
GRANITE.....	358	30,749	23,799	6,950	77.4	223	23,015	74.8	110	6,398	20.8	15	1,386	784	552	4.3
New England.....	163	12,998	12,289	709	94.4	109	11,772	90.6	37	466	3.6	7	760	467	293	5.8
Middle Atlantic.....	40	1,031	894	137	86.7	23	892	86.5	16	125	12.1	1	14	2	12	1.4
East North Central.....	14	712	565	147	79.4	10	445	62.5	3	107	15.0	1	160	120	40	22.5
West North Central.....	30	1,678	1,627	51	97.0	18	1,606	95.7	10	44	2.6	2	28	21	7	1.7
South Atlantic.....	67	8,862	3,378	4,984	43.8	37	3,778	42.6	29	4,978	56.2	1	106	100	6	1.2
East South Central.....	16	738	369	369	50.0	8	335	45.4	6	149	20.2	2	254	34	220	34.4
West South Central.....	14	1,315	896	419	68.1	9	896	68.1	5	419	31.9	.....	.....	.....	.....	.....
Mountain.....	24	3,415	3,301	114	96.7	19	3,291	96.4	4	110	3.2	.....	.....	.....	.....	.....
Pacific.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
SANDSTONE.....	255	50,161	34,726	15,435	69.2	148	33,823	67.4	96	14,461	28.8	11	1,877	908	974	3.7
New England.....	4	9	3	6	33.3	2	3	33.3	2	6	66.7	.....	.....	.....	.....	.....
Middle Atlantic.....	127	31,792	26,489	5,303	83.3	73	26,044	81.9	52	5,028	15.8	2	720	445	275	2.3
East North Central.....	51	4,859	3,591	1,268	73.9	31	3,359	69.1	16	683	14.1	4	817	232	585	16.8
West North Central.....	10	340	268	72	78.8	6	239	70.3	3	25	7.4	1	76	29	47	22.4
South Atlantic.....	20	9,325	985	8,340	10.6	12	955	10.2	7	8,320	89.2	1	80	30	20	0.5
East South Central.....	9	454	439	15	96.7	5	439	96.7	4	15	3.3	.....	.....	.....	.....	.....
West South Central.....	9	196	82	114	41.8	5	82	41.8	4	114	58.2	.....	.....	.....	.....	.....
Mountain.....	18	3,000	2,791	209	93.0	12	2,631	87.7	5	169	5.6	1	200	160	40	6.7
Pacific.....	7	186	78	108	41.9	2	71	38.2	3	101	54.3	2	14	7	7	7.5
BASALT.....	163	15,625	7,139	8,486	45.7	89	6,798	43.5	67	8,247	52.8	7	580	341	239	3.7
New England.....	45	3,117	2,854	263	91.6	31	2,773	89.0	11	182	5.8	3	162	81	81	5.2
Middle Atlantic.....	69	6,046	1,964	4,082	32.5	30	1,764	29.2	36	3,927	65.0	3	355	200	155	5.9
East North Central.....	3	563	490	63	88.6	2	490	88.6	1	63	11.4	.....	.....	.....	.....	.....
South Atlantic.....	11	254	205	49	80.7	6	205	80.7	5	49	19.3	.....	.....	.....	.....	.....
East South Central.....	1	160	.....	160	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West South Central.....	1	5	.....	5	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mountain.....	33	5,490	1,621	3,869	29.5	19	1,561	28.4	13	3,866	70.4	1	68	60	3	1.1
Pacific.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
SLATE.....	101	5,440	3,673	1,767	67.5	34	3,158	58.1	58	1,092	20.1	9	1,190	515	675	21.9
New England.....	41	2,841	1,761	1,080	62.0	7	1,275	44.9	26	415	14.6	8	1,151	496	655	40.5
Middle Atlantic.....	51	1,502	895	607	59.6	21	895	59.6	30	607	40.4	.....	.....	.....	.....	.....
South Atlantic.....	8	1,037	957	80	92.3	5	928	92.5	2	70	6.8	1	39	29	10	3.8
Mountain.....	1	60	.....	60	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pacific.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MARBLE.....	48	28,977	11,818	17,159	40.8	32	9,443	32.6	11	14,076	48.6	5	5,458	2,375	3,083	18.8
New England.....	18	9,600	8,530	1,070	88.9	13	8,402	87.5	3	47	0.5	2	1,151	128	1,023	12.0
Middle Atlantic.....	6	107	97	10	90.7	5	97	90.7	1	10	9.3	.....	.....	.....	.....	.....
East North Central.....	1	40	.....	40	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West North Central.....	1	20	.....	20	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Atlantic.....	3	4,069	2,023	2,046	49.7	1	20	100.0	1	46	1.1	1	4,000	2,000	2,000	98.3
East South Central.....	15	1,258	1,008	255	79.7	10	756	60.1	3	195	15.5	2	307	247	60	24.4
West South Central.....	1	13,733	.....	13,733	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mountain.....	1	150	145	5	96.7	2	145	96.7	1	13,733	100.0	.....	.....	.....	.....	.....
Pacific.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

## POWER.

The number and horsepower of the several types of prime movers and of electric motors used by the stone-quarrying industries in 1919 are presented in detail for these industries by states in the table of detailed statistics at the end of this report.

Table 21 shows for the stone-quarrying industries the power equipment used by producing enterprises in 1919 and 1909, and the per cent of increase or decrease in horsepower for each class of equipment used. For all industries combined a considerable increase is shown in the aggregate horsepower used, and this increase was brought about by the large increase in

the horsepower of electric motors operated by purchased current which more than offset a considerable decrease in the horsepower of prime movers used. In 1909, 90 per cent of the aggregate horsepower used was developed by prime movers and only 10 per cent by electric motors operated by purchased current. On the other hand, in 1919, the horsepower of prime movers was only 58.4 per cent, while the horsepower of electric motors operated by purchased current constituted 41.6 per cent of the aggregate horsepower. There was also an appreciable increase in horsepower of electric motors run by current generated by the enterprises reporting them.

TABLE 21.—COMPARATIVE STATISTICS, POWER USED, PRODUCING ENTERPRISES: 1919.

INDUSTRY.	Aggregate horsepower.	PRIME MOVERS.						ELECTRIC MOTORS OPERATED BY PURCHASED POWER.		ELECTRIC MOTORS RUN BY CURRENT GENERATED BY THE ENTERPRISE REPORTING.		
		Total horsepower.	Steam engines.		Internal-combustion engines.		Water wheels and turbines.		Number.	Horse-power. <sup>1</sup>	Number.	Horse-power.
			Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.				
All industries..... 1919..	376,808	219,938	3,420	208,763	440	9,045	18	2,130	3,971	1,156,570	490	19,210
..... 1909..	308,442	273,090	5,533	257,396	278	6,721	65	8,973	681	30,362	599	17,405
Per cent of increase %.....	24.2	-19.5	-38.2	-18.9	58.3	34.6	-72.3	-76.3	483.1	416.8	-18.2	10.4
Limestone..... 1919..	213,717	126,387	1,793	120,479	252	5,043	9	865	2,046	87,330	267	11,421
..... 1909..	125,024	115,573	2,166	112,390	119	2,911	9	272	206	9,451	170	5,291
Per cent of increase %.....	70.9	9.4	-17.2	7.2	111.8	78.2	.....	218.0	898.2	824.0	57.1	115.9
Granite..... 1919..	55,674	34,711	747	32,591	84	1,343	4	777	450	120,963	34	1,520
..... 1909..	61,095	54,213	1,346	53,549	65	1,142	6	522	159	6,882	57	1,346
Per cent of increase %.....	-8.9	-35.0	-44.5	-38.0	.....	17.6	.....	48.9	183.0	204.6	.....	12.9
Sandstone..... 1919..	33,899	21,197	340	19,061	71	2,116	.....	.....	386	12,672	155	4,696
..... 1909..	36,556	32,674	821	31,306	61	1,190	2	178	71	3,882	86	2,162
Per cent of increase %.....	-7.4	-35.1	-58.6	-39.1	.....	77.8	.....	.....	228.4	.....	.....	117.3
Basalt..... 1919..	37,307	22,944	262	22,324	30	530	.....	.....	255	14,468	11	1,049
..... 1909..	29,211	31,917	255	20,922	19	996	.....	.....	173	7,294	18	521
Per cent of increase %.....	27.7	4.2	2.7	6.7	.....	-47.7	.....	.....	47.4	98.3	.....	101.3
Slate..... 1919..	20,613	8,778	193	8,669	1	8	2	101	426	11,835	4	44
..... 1909..	29,777	27,769	707	27,255	3	46	14	468	63	2,008	2	50
Per cent of increase %.....	-30.8	-68.4	-72.7	-68.2	.....	.....	.....	-78.4	.....	489.4	.....	.....
Marble..... 1919..	15,628	6,021	85	5,619	2	15	3	387	408	9,607	19	490
..... 1909..	21,779	20,944	238	12,974	11	437	34	7,533	9	536	266	8,085
Per cent of increase %.....	-28.2	-71.3	-64.3	-56.7	.....	-96.6	.....	-94.9	.....	1,060.6	-92.9	-94.0

<sup>1</sup> Includes 60 horsepower reported for equipment operated by purchased compressed air.  
<sup>2</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

Table 22 shows, for the stone industries and for selected states in each industry, the average number of wage earners employed, the total horsepower used, and the horsepower used per wage earner. The table shows considerable differences with respect to this item between the industries and between states in the various industries, but the larger figures on horse

power per wage earner are shown in the industries and states producing crushed stone, stone for manufacturing uses, and dressed monumental and building stone in large quantities.<sup>1</sup>

<sup>1</sup> See U. S. Geological Survey, Mineral Resources of the United States, Stone in 1919.

TABLE 22.—HORSEPOWER PER WAGE EARNER, PRODUCING ENTERPRISES: 1919.

INDUSTRY AND STATE.	Wage earners (average number).	Power used (aggregate horsepower).	Horsepower per wage earner.	INDUSTRY AND STATE.	Wage earners (average number).	Power used (aggregate horsepower).	Horsepower per wage earner.
ALL INDUSTRIES.....	42,986	376,808	8.8	SANDSTONE.			
Limestone.....	22,069	213,717	9.7	Pennsylvania.....	1,673	10,844	6.5
Granite.....	8,049	55,674	6.9	Ohio.....	875	5,431	6.2
Sandstone.....	4,287	33,899	7.9	Illinois.....	288	3,806	13.2
Basalt.....	3,336	37,307	11.2	West Virginia.....	348	3,486	10.2
Slate.....	3,513	20,613	5.9	BASALT.			
Marble.....	1,732	15,628	9.0	Pennsylvania.....	721	6,058	8.4
LIMESTONE.				New Jersey.....	687	6,340	10.0
Pennsylvania.....	5,573	30,155	5.4	Massachusetts.....	547	4,721	8.6
Ohio.....	2,262	39,831	17.6	Connecticut.....	363	6,254	17.2
Indiana.....	1,800	21,642	12.0	California.....	262	4,792	18.3
New York.....	1,739	22,370	12.9	SLATE.			
Illinois.....	1,244	22,325	17.9	Pennsylvania.....	1,892	9,678	5.1
Missouri.....	1,171	8,305	7.1	Vermont.....	1,089	6,447	6.2
West Virginia.....	1,003	6,373	6.4	MARBLE.			
Virginia.....	777	5,723	7.4	Vermont.....	570	7,354	12.9
Alabama.....	885	5,457	6.5	Tennessee.....	540	3,885	7.2
Kentucky.....	676	4,485	6.6				
Wisconsin.....	382	5,772	15.1				
GRANITE.							
Vermont.....	1,062	10,789	10.2				
Massachusetts.....	1,084	6,580	6.4				
North Carolina.....	859	2,025	2.1				
Wisconsin.....	753	2,850	3.8				
New Hampshire.....	589	4,121	7.0				
Maine.....	747	4,050	5.4				
Minnesota.....	392	3,675	9.4				

## METHOD OF OPERATION.

Table 23 presents the principal statistics, for the stone industry as a whole and for each industry separately, for enterprises using quarrying machinery and for those without quarrying machinery. Quarry enterprises were classified, in accordance with the reports of the operators, on the basis of quarrying machinery and power equipment used, into those using quarrying machinery and those operating without quarrying machinery. Small enterprises using a few power drills were not grouped with those using more elaborate quarrying machinery but were tabulated in the class without quarrying machinery. For this reason, and also

because hoisting machinery and the power equipment in crushing plants was reported by enterprises which did not use quarrying machinery, enterprises in the class without quarrying machinery reported considerable power used and expense for fuel and purchase of power. Three-fourths of all enterprises in the stone industries, as shown in Table 23, used quarrying machines. In the sandstone industry the proportion was less but in the slate and marble industries much greater. For all stone industries combined more than 90 per cent of the wage earners and value of products were reported by enterprises using quarrying machinery.

TABLE 23.—STATISTICS FOR PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO USE OF QUARRYING MACHINERY: 1919.

	ALL INDUSTRIES.		LIMESTONE.		GRANITE.		SANDSTONE.		BASALT.		SLATE.		MARBLE.
	Using quarrying machinery. <sup>1</sup>	Without quarrying machinery.	Using quarrying machinery.	Without quarrying machinery.	Using quarrying machinery.	Without quarrying machinery.	Using quarrying machinery.	Without quarrying machinery.	Using quarrying machinery.	Without quarrying machinery.	Using quarrying machinery.	Without quarrying machinery.	Using quarrying machinery. <sup>1</sup>
Number of enterprises.....	1,367	453	677	218	266	92	148	107	134	29	94	7	48
Number of quarries.....	1,460	462	703	222	287	94	167	109	144	30	97	7	62
Proprietors and firm members, total.....	538	450	437	196	207	121	75	104	57	20	53	9	7
Number performing manullabor.....	237	180	114	61	76	69	13	40	14	6	17	4	3
Wage earners (av. number)...	39,259	3,727	19,902	2,167	7,626	423	3,550	737	3,047	289	3,402	111	1,732
Power used (aggregate h. p.)...	350,131	26,677	196,754	16,963	53,474	2,200	30,678	3,191	33,689	3,618	19,908	705	15,628
Capital.....	\$137,453,131	\$11,306,402	\$76,070,711	\$6,063,656	\$17,798,872	\$1,026,108	\$16,403,861	\$2,551,460	\$11,423,067	\$1,476,114	\$6,723,108	\$200,064	\$9,033,522
Wages.....	41,684,178	3,850,620	21,654,621	2,271,711	8,173,445	414,214	3,732,904	715,907	3,636,044	355,263	3,034,724	93,525	1,452,440
Cost of supplies and materials.....	17,115,618	1,325,841	10,101,192	867,028	2,506,616	87,424	1,461,531	202,901	1,874,713	156,156	620,127	12,332	552,439
Fuel and purchased power.....	7,028,332	452,973	3,879,134	297,256	1,054,137	40,684	801,167	47,065	663,870	56,118	405,689	11,830	224,385
Contract work.....	806,627	190,349	510,444	155,113	113,397	5,240	29,065	25,096	40,806	600	91,333	4,300	20,582
Value of products.....	94,202,202	7,482,717	48,482,984	4,460,940	17,468,346	810,999	9,351,090	1,333,879	8,917,856	740,121	5,584,014	136,778	4,397,912

<sup>1</sup> Includes 2 establishments, without quarrying machinery, to avoid disclosure of individual operations.

FUEL USED.

Table 24 shows for producing quarry enterprises in the United States as a whole and for each of the stone industries by states the quantity of the various kinds of fuel used in quarrying operations. Bituminous

coal was the fuel chiefly used in the stone industries. Although small quantities of anthracite and some wood and fuel oils or gasoline were reported by each of the industries, the quantities reported were relatively insignificant.

TABLE 24.—FUEL USED BY PRODUCING ENTERPRISES: 1919.

INDUSTRY AND STATE.	COAL.		Coke (tons, 2,000 lbs.).	Wood (cords)	Fuel oils (bbils.).	Gasoline and other volatile oils (bbils.).	Natural gas (1,000 cu. ft.).	INDUSTRY AND STATE.	COAL.		Coke (tons, 2,000 lbs.).	Wood (cords)	Fuel oils (bbils.).	Gasoline and other volatile oils (bbils.).	Natural gas (1,000 cu. ft.).
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).							Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).					
<b>ALL INDUSTRIES</b> .....	20,621	1,067,848	2,522	11,888	70,432	16,022	151,830	<b>GRANITE—continued.</b>							
Limestone.....	5,409	673,989	937	4,765	33,221	11,397	5,887	New York.....	15	1,225					5
Granite.....	1,723	115,250	55	4,297	13,164	2,411		North Carolina.....		15,157	5				
Sandstone.....	2,418	128,832	1,530	160	8,621	1,423	145,943	Pennsylvania.....		3,662					149
Basalt.....	2,099	84,566		2,129	15,390	620		Rhode Island.....	18	5,098					125
Slate.....	8,762	34,053		214	36	1		South Carolina.....		5,288		432			12
Marble.....	210	31,158		823		170		Vermont.....	1,561	14,537		140			15
<b>LIMESTONE.</b>								Virginia.....		2,246					
Alabama.....		28,640	397	30				Washington.....		673		291			100
Arizona.....					236	17		Wisconsin.....	15	5,334		1,534			1
Arkansas.....		3,301		550		10		All other states.....		2,063		1,215			597
California.....					6,781	368		<b>SANDSTONE.</b>							
Colorado.....		2,853				257		California.....					48		
Florida.....		390		2,052				Colorado.....		75					
Georgia.....		1,710						Illinois.....		32,828	400		240		114
Illinois.....		67,618			53	507		Kentucky.....		2,040		35			
Indiana.....	1,366	64,798	10			342		New Jersey.....							10
Iowa.....		8,374		115		495		New York.....	30	519					144
Kansas.....		5,126			3,275	320		Ohio.....		2,255			20		110
Kentucky.....		14,960		70	9	322		Pennsylvania.....	2,388	41,648		87			285
Maryland.....		2,603		60		19		South Dakota.....							1
Minnesota.....		1,578		30		7		West Virginia.....		603					
Missouri.....		23,484		194	1,517	366		Wisconsin.....		10,382					316
Montana.....		1,065		42		36		All other states.....		1,196			160		72
New Jersey.....	160	7,579	139	21	66	102		<b>BASALT.</b>							
New York.....	270	34,764	25		261	484		California.....					5,309		14
Ohio.....	100	137,879	187	139	120	2,075	1,476	Connecticut.....	26	7,455		35			4
Oklahoma.....		3,615			13,518	275	331	Maryland.....		5,104					4
Oregon.....				272		321		Massachusetts.....	32	6,710			24		
Pennsylvania.....	702	130,886	179	237	201	3,408	4,080	New Jersey.....	2,041	22,058			4		228
Tennessee.....		8,354		28		206		Oregon.....		250		1,752	4,220		6
Utah.....		760			736	34		Pennsylvania.....		30,847			303		83
Vermont.....		887		2		2		Washington.....		534		336	3,150		104
Virginia.....	61	27,994		518	590	212		All other states.....		11,608		6	2,350		177
West Virginia.....		13,997		50		9		<b>SLATE.</b>							
Wisconsin.....		12,066		202	100	468		Maryland.....	2	965					
All other states.....	2,750	70,208		153	5,758	735		New York.....	100	1,419					
<b>GRANITE.</b>								Pennsylvania.....	8,504	24,106			36		1
Arizona.....				36	6,096	251		Vermont.....	156	3,578		39			
California.....	5	1			6,890	92		Virginia.....		3,637					
Connecticut.....	22	2,345		100		100		All other states.....		348		175			
Georgia.....		11,766		30		178		<b>MARBLE.</b>							
Maine.....		9,097		75		193		New York.....	4	1,928					18
Maryland.....		10,157		5		127		Tennessee.....		20,704					1
Massachusetts.....	37	14,602	50	190	5	56		Vermont.....	206	2,035		23			
Minnesota.....		6,315		125		266		All other states.....		6,491		300			151
Montana.....		5			85	2									
New Hampshire.....	50	4,853		124	88	142									
New Jersey.....		826													

GENERAL TABLE.

Table 25 presents in detail for 1919 the statistics for producing quarry enterprises in the United States as a whole, for each stone industry separately, and for each state which can be shown in each industry without disclosure of individual operations. As but two quarrying enterprises reported operations for development only, statistics on nonproducing operations can not be shown.

The table gives the number of enterprises and quarries, the number of those operating mills and dressing plants; the acreage of land controlled according to kind, and the tenure of mineral land; the capital invested; the principal expenses of operation and development; the value of products; the persons engaged in the industries by classes and occupations; and the number and horsepower of power equipment.



TABLE 25.—DETAILED STATISTICS FOR THE STONE-QUARRYING

	Number of enterprises.	Number of quarries.	Enterprises operating mills and dressing plants.	LAND CONTROLLED (ACRES).				Aggregate.	PERSONS ENGAGED IN INDUSTRY.								
				Mineral land.					Timber and other lands.	Proprietors and officials.					Clerks and other subordinate employes.		
				Total operated.	Owned.	Held under lease.	Aggregate.			Total.	Proprietors and firm members.		Salaried officers.	Superintendents and managers.	Technical employes.	Male.	Female.
											Total.	Per-form-ing manual labor.					
<b>United States—All industries.</b>	<b>1,820</b>	<b>1,922</b>	<b>254</b>	<b>252,942</b>	<b>165,872</b>	<b>53,103</b>	<b>77,569</b>	<b>48,067</b>	<b>2,532</b>	<b>1,228</b>	<b>417</b>	<b>832</b>	<b>1,207</b>	<b>104</b>	<b>1,125</b>	<b>424</b>	
<b>Limestone.</b>	<b>295</b>	<b>925</b>	<b>44</b>	<b>122,620</b>	<b>64,717</b>	<b>28,206</b>	<b>52,943</b>	<b>24,705</b>	<b>1,727</b>	<b>233</b>	<b>175</b>	<b>275</b>	<b>672</b>	<b>47</b>	<b>701</b>	<b>206</b>	
<b>Granite.</b>	<b>258</b>	<b>281</b>	<b>152</b>	<b>20,659</b>	<b>22,789</b>	<b>5,950</b>	<b>6,295</b>	<b>8,951</b>	<b>696</b>	<b>148</b>	<b>187</b>	<b>127</b>	<b>84</b>	<b>6</b>	<b>122</b>	<b>78</b>	
<b>Sandstone.</b>	<b>255</b>	<b>276</b>	<b>66</b>	<b>48,729</b>	<b>24,725</b>	<b>15,435</b>	<b>6,641</b>	<b>4,297</b>	<b>434</b>	<b>179</b>	<b>33</b>	<b>106</b>	<b>123</b>	<b>6</b>	<b>115</b>	<b>61</b>	
<b>Basalt.</b>	<b>183</b>	<b>174</b>	<b>6</b>	<b>15,622</b>	<b>7,122</b>	<b>3,426</b>	<b>1,338</b>	<b>2,721</b>	<b>310</b>	<b>77</b>	<b>20</b>	<b>25</b>	<b>128</b>	<b>10</b>	<b>108</b>	<b>42</b>	
<b>Slate.</b>	<b>101</b>	<b>104</b>	<b>61</b>	<b>5,440</b>	<b>2,872</b>	<b>1,787</b>	<b>2,205</b>	<b>2,852</b>	<b>229</b>	<b>64</b>	<b>21</b>	<b>24</b>	<b>117</b>	<b>4</b>	<b>45</b>	<b>25</b>	
<b>Marble.</b>	<b>48</b>	<b>62</b>	<b>25</b>	<b>28,969</b>	<b>11,818</b>	<b>17,150</b>	<b>6,272</b>	<b>1,801</b>	<b>96</b>	<b>7</b>	<b>3</b>	<b>48</b>	<b>40</b>	<b>3</b>	<b>23</b>	<b>25</b>	
<b>LIMESTONE.</b>																	
Alabama	15	15	1	4,171	3,991	180	497	901	37	3	.....	6	27	1	27	2	
Arizona	4	4	.....	688	688	.....	.....	48	2	1	.....	.....	1	.....	1	.....	
Arkansas	6	6	1	2,622	2,295	327	1,600	139	23	10	.....	7	6	.....	2	.....	
California	13	13	.....	3,515	887	2,628	1,000	275	19	8	.....	6	4	1	9	2	
Colorado	14	14	.....	3,004	2,121	883	.....	246	15	8	5	.....	7	.....	3	.....	
Florida	4	6	.....	236	106	130	.....	124	11	3	2	3	5	.....	1	1	
Georgia	5	5	.....	242	120	122	.....	99	14	1	.....	7	6	.....	5	.....	
Illinois	41	41	1	14,922	14,348	574	37,978	1,448	110	14	3	42	49	5	73	21	
Indiana	67	71	13	4,825	4,128	697	.....	2,106	163	44	22	44	65	10	114	29	
Iowa	25	25	.....	836	704	132	190	307	40	21	7	5	13	1	17	4	
Kansas	35	35	.....	1,208	672	536	20	563	59	45	12	4	9	1	18	2	
Kentucky	47	50	1	1,984	1,731	253	175	754	67	39	10	13	15	.....	8	3	
Maryland	11	11	.....	232	51	181	205	169	11	9	.....	2	2	.....	6	3	
Minnesota	10	10	3	371	359	12	.....	176	15	8	1	2	5	.....	5	.....	
Missouri	70	71	6	1,303	899	414	732	1,327	121	43	13	33	39	6	28	7	
Montana	7	7	2	1,823	1,680	143	.....	99	10	6	2	.....	4	.....	2	.....	
New Jersey	10	10	.....	428	325	103	69	273	10	.....	.....	2	6	.....	.....	.....	
New York	55	56	2	5,304	5,046	258	825	1,932	127	31	4	47	49	.....	51	15	
Ohio	90	91	1	9,437	8,849	756	1,154	2,599	196	65	20	36	92	3	102	39	
Oklahoma	13	13	.....	1,099	394	706	.....	351	37	9	1	5	21	.....	33	3	
Oregon	4	4	.....	1,509	1,219	290	.....	72	3	1	.....	.....	2	.....	.....	.....	
Pennsylvania	184	200	3	31,175	6,165	25,045	2,221	6,086	334	165	44	49	113	7	91	38	
Tennessee	21	21	1	594	462	132	.....	385	34	12	5	13	8	.....	2	.....	
Utah	7	8	.....	1,931	1,809	122	.....	159	9	.....	.....	.....	9	.....	1	.....	
Vermont	4	4	1	80	80	.....	.....	52	8	3	.....	.....	4	.....	1	.....	
Virginia	31	32	2	3,275	2,793	482	1,776	848	49	21	8	8	20	.....	17	5	
West Virginia	17	17	.....	2,585	869	1,716	1,943	1,053	36	9	2	6	21	.....	17	7	
Wisconsin	33	33	3	1,848	1,322	526	.....	462	57	23	5	15	18	1	19	4	
All other <sup>1</sup>	52	52	3	22,073	20,614	1,459	2,337	1,692	110	30	7	22	52	6	46	16	
<b>GRANITE.</b>																	
Arizona	3	5	1	232	83	149	50	61	3	.....	.....	3	.....	.....	.....	.....	
California	17	18	7	2,944	2,830	114	160	199	27	15	8	8	4	.....	8	2	
Connecticut	11	11	7	410	434	21	85	116	10	9	3	2	7	1	2	3	
Georgia	20	20	8	5,072	385	4,687	8	631	40	15	3	13	9	3	10	1	
Maine	42	42	33	2,016	1,609	442	2,075	839	78	50	35	5	19	4	7	7	
Maryland	9	9	2	396	216	180	442	250	16	3	2	6	7	.....	7	1	
Massachusetts	42	43	23	3,384	3,262	122	576	1,167	91	42	10	23	22	4	28	14	
Minnesota	27	34	8	1,074	1,027	47	78	445	41	25	18	7	4	5	7	5	
Montana	3	3	2	425	405	20	.....	7	3	3	2	.....	.....	.....	.....	.....	
New Hampshire	23	24	21	4,688	4,655	33	491	657	59	29	17	6	22	2	4	5	
New Jersey	4	6	.....	250	225	25	55	52	4	2	1	1	1	.....	.....	.....	
New York	7	7	3	301	267	34	10	115	11	3	1	1	6	1	2	1	
North Carolina	16	18	5	688	654	34	148	1,025	48	10	6	14	20	4	17	1	
Pennsylvania	29	30	4	480	402	78	9	252	49	37	5	5	7	.....	4	2	
Rhode Island	8	8	2	433	377	56	764	296	24	4	.....	3	11	6	4	6	
South Carolina	10	10	3	2,364	2,310	54	10	356	26	9	2	10	6	1	6	2	
Vermont	27	31	3	1,987	1,632	355	761	1,138	53	16	7	14	21	2	11	12	
Virginia	7	7	.....	315	300	15	5	176	16	5	.....	4	7	.....	2	1	
Washington	5	5	3	157	157	.....	32	53	10	5	1	1	4	.....	1	.....	
Wisconsin	14	16	9	712	565	147	548	798	26	1	1	10	14	1	11	8	
All other <sup>2</sup>	34	34	8	2,331	1,704	627	691	309	52	45	23	1	6	.....	2	2	
<b>SANDSTONE.</b>																	
California	6	7	.....	176	73	103	21	34	7	6	.....	.....	1	.....	.....	.....	
Colorado	7	8	.....	504	461	43	.....	19	5	5	4	.....	.....	.....	.....	.....	
Illinois	15	15	4	1,227	622	705	.....	114	45	13	3	22	10	.....	9	11	
Kentucky	5	5	2	440	437	3	.....	210	9	1	.....	4	2	.....	1	.....	
New Jersey	5	6	1	67	37	30	41	26	6	5	1	.....	1	.....	.....	.....	
New York	22	26	17	246	199	47	403	192	37	22	15	5	9	1	8	1	
Ohio	21	23	10	2,978	2,689	289	116	968	41	2	.....	19	19	1	31	21	
Pennsylvania	100	107	18	31,459	26,253	5,226	5,424	1,898	168	78	20	34	56	.....	40	17	
South Dakota	5	6	1	128	113	15	.....	96	5	.....	.....	2	3	.....	2	.....	
West Virginia	15	16	6	8,878	738	8,140	100	385	23	9	2	8	16	.....	7	2	
Wisconsin	12	12	3	493	220	273	75	154	15	6	.....	2	7	.....	5	1	
All other <sup>3</sup>	42	45	4	2,023	2,884	561	137	706	63	22	8	10	19	2	13	7	

<sup>1</sup> Same number reported for one or more other months.  
<sup>2</sup> Includes enterprises in states as follows: Connecticut, 1; Idaho, 3; Louisiana, 1; Maine, 1; Massachusetts, 1; Michigan, 11; Nebraska, 8; Nevada, 1; North Carolina, 2; South Dakota, 3; Texas, 12; Wyoming, 3.

INDUSTRIES, BY STATES, PRODUCING ENTERPRISES: 1919.

PERSONS ENGAGED IN INDUSTRY—continued.

Wage earners.			Wage earners, Dec. 15, or nearest representative day.													Capital.			
Average number.	Number 15th day of—		Total.		Foremen, bosses, etc.		Enginemen, hoistmen, etc.		Quarrymen, drillmen, etc.		Trackmen, men engaged in hauling, etc.		Muckers, laborers, and others not classified.		In mills and dressing plants (above ground).	Under 16 years of age (above ground).	Females (above ground).	Capital.	
	Maximum month.	Minimum month.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.					
42,986	Au 49,378	Fe 22,990	47,196	1,511	1,876	46	5,585	56	16,462	692	3,211	158	14,885	559	5,227	16	15	\$148,759,533	1
22,080	Au 25,656	Fe 17,396	24,272	780	957	10	3,278	58	8,422	204	1,930	104	2,716	408	958	9	10	82,194,267	2
8,049	Au 9,228	Ja 5,063	9,166		379		558		1,599		387		544		2,023			18,322,930	3
4,287	Au 4,961	Fe 3,305	4,861		187		408		1,130		304		1,321		725			18,545,321	4
3,236	Au 4,087	Ja 1,087	3,789		144		478		1,180		182		1,321		45			12,289,171	5
3,513	De 3,927	Ja 2,852	3,942	731	133	38	371	5	811	488	200	84	1,321	150	925	4		6,923,172	6
1,732	Oc 1,975	Ja 1,459	1,856		66		150		783		41		397		522			9,032,532	7
836	Se 904	Jy 730	793	117	24	2	136	33	166	33	171	26	291	23	5			1,089,506	8
45	Ja 78	De 28	28		2		2		16				8					108,810	9
114	Se 140	Ja 73	126		9		19		35		2		57		4			787,167	10
245	Ja 283	Se 225	333		11		47		112		14		149					1,323,063	11
228	Ja 327	No 73	285		9		16		92		53		115					736,561	12
111	Mh 122	Se 102	102		5		12		47		6		32					116,374	13
80	Fe 95	Oc 61	102		3		8				11		80					308,980	14
1,244	My 1,488	Fe 810	1,342		62		249		387		118		523		8			8,810,097	15
1,800	Au 2,419	Fe 915	2,481		88		340		703		52		681		622		1	7,196,592	16
246	Se 343	Ja 109	321		17		44		148		10		102					945,783	17
494	Je 637	De 231	507		10		44		235		35		183					768,585	18
676	Au 903	Ja 345	896		31		40		415		195		187		18			975,318	19
149	Au 192	Mh 105	177		3		8		63		13		90					219,873	20
156	Je 217	Ja 52	301		21		21		112		37		37		24			497,618	21
1,171	Se 1,414	Fe 826	1,841		57		130		543		153		399		50			2,447,811	22
87	Je 115	De 69	86		7		7		32		1		24		15			445,981	23
258	Ja 299	My 222	272		11		40		84		10		127					1,586,492	24
1,799	Au 2,111	Fe 1,184	1,801		95		282		440		166		801		17			11,186,460	25
2,262	Au 2,659	Fe 1,878	2,482		94		419		917		100		862		90			10,087,808	26
278	Au 391	Jy 217	397		11		44		72		33		237					699,356	27
69	De 142	Ap 19	158		3		8		57		20		70				1	372,501	28
5,573	Au 6,181	Fe 5,051	5,217	663	194	8	720	20	1,072	171	400	78	1,769	386	62	5		12,941,066	29
349	Mh 380	No 301	414		21		15		179		49		141		9			350,106	30
148	Se 166	Oc 112	159		7		10		53		7		82					194,530	31
40	My 61	De 28	51		2		4		4		11		28		2			151,061	32
777	My 992	Ja 611	848		42		119		279		62		332		14	1	3	1,825,288	33
1,093	Au 1,085	Ja 907	1,087		38		72		443		35		444					1,275,947	34
382	Jy 517	Ja 178	477		19		42		174		12		219		11	1		2,260,160	35
1,520			1,848		80		371		548		191		646		12	2	5	12,561,539	36
58	Mh 112	Jy 26	82		4		10		18		10		40					62,400	37
162	De 247	Je 124	236		9		38		68		2		57		72			1,027,730	38
92	Je 111	Fe 67	117		9		18		39		28		7		21			367,209	39
580	Au 710	Ja 441	651		24		45		296		26		124		187			885,838	40
747	Je 1,044	Fe 244	964		42		100		318		113		72		319			1,044,000	41
235	Au 314	Fe 122	279		10		36		117		16		91		9			627,625	42
1,034	Jy 1,212	Fe 635	1,181		62		132		387		100		193		316	1		3,146,126	43
4	Au 8	No 2	49		19		25		313		5		16		58			771,586	44
589	Oc 780	Ja 260	690		18		72		221		13		48		318	1		1,455,786	46
48	Oc 81	Ja 27	72		2		5		20		3		33					58,000	47
101	Au 158	Fe 26	120		5		7		60		7		13		26			439,047	48
959	Se 1,026	Ja 843	1,015		35		50		206		120		309		295			702,994	49
197	Jy 261	Fe 129	237		12		12		131		18		54		10			475,288	50
262	Se 316	Ja 192	307		12		38		114		5		63		70			553,866	51
322	No 351	Ja 294	363		17		34		194		23		110		8			994,240	52
1,062	Au 1,185	Ja 855	1,112		62		141		668		23		135		83			3,202,754	53
157	Au 188	Ja 84	177		7		17		61		24		68					368,500	54
42	Au 51	De 34	61		5		6		23				16		11			208,498	55
763	Se 860	Ja 583	772		21		58		304		39		130		220			1,790,740	56
253			285		8		18		161		3		42		53		1	588,084	57
27	Au 53	Ja 14	61		5		3		15				38					113,602	58
14	Se 31	De 4	21		2				17				2					64,450	59
288	No 328	Ap 247	288		19		59		41		38		62		84		2	3,788,564	60
56	Se 82	Ja 5	83		3		8		50				5		17			189,242	61
20	Ap 30	Ja 7	36		4		1		5				23					25,000	62
146	Se 211	Ja 40	204		11		11		72				46		3			534,031	63
875	My 1,008	Fe 687	818		29		45		388		21		156		239			4,028,782	64
1,673	Au 1,942	Fe 1,268	1,872		77		164		596		168		640		227			6,776,667	65
89	Au 141	Ja 40	101		3		10		16		1		67					194,507	66
343	Au 395	Fe 291	427		16		31		145		30		137		68			1,226,569	67
133	Au 181	Ja 60	169		4		9		94				46		16			341,560	68
623			771		24		64		220		40		399		24		1	1,676,247	69

\* Includes enterprises in states as follows: Arkansas, 2; Colorado, 8; Delaware, 2; District of Columbia, 3; Missouri, 2; Oklahoma, 6; Oregon, 2; South Dakota, 1; Texas, 8.  
 † Includes enterprises in states as follows: Alabama, 2; Arizona, 2; Arkansas, 7; Connecticut, 3; Idaho, 2; Indiana, 1; Maryland, 2; Massachusetts, 1; Michigan, 2; Minnesota, 1; Missouri, 4; Montana, 2; North Carolina, 1; Oklahoma, 2; Tennessee, 2; Utah, 2; Virginia, 2; Washington, 1; Wyoming, 3.

TABLE 25.—DETAILED STATISTICS FOR THE STONE-QUARRYING

	Enterprises operating mills and dressing plants.		LAND CONTROLLED (ACRES).				PERSONS ENGAGED IN INDUSTRY.							
			Mineral land.				Proprietors and officials.							
			Number of enterprises.	Number of quarries.	Total operated.	Owned.	Held under lease.	Timber and other lands.	Aggregate.	Proprietors and firm members.		Salaried officers.	Superintendents and managers.	Technical employees.
Total.	Per-forming manual labor.	Male.								Female.				
<b>BASALT.</b>														
70	California	16	17	1,407	1,171	236	294	25	7	2	5	13	4	3
71	Connecticut	20	22	2,317	2,221	96	425	43	11	1	15	14	3	13
72	Maryland	10	10	244	205	39	210	23	14	2	16	9	3	3
73	Massachusetts	21	23	690	525	165	601	36	4	4	16	13	3	14
74	New Jersey	36	36	1,445	961	484	727	62	14	7	20	26	2	21
75	Oregon	9	9	3,871	282	3,609	142	13	3	2	3	7	5	5
76	Pennsylvania	29	32	4,258	733	3,525	823	63	14	4	18	30	1	26
77	Washington	8	10	212	188	24	115	11	5	2	1	4	1	5
78	All other <sup>1</sup>	14	15	1,181	853	328	454	34	5	7	7	22	12	8
<b>SLATE.</b>														
79	Maryland	4	4	401	401	0	93	6	1	1	1	5	1	1
80	New York	9	10	448	286	162	148	13	8	5	4	5	1	1
81	Pennsylvania	42	42	1,054	629	425	2,051	128	17	9	47	63	1	24
82	Vermont	33	33	1,355	825	530	1,171	103	38	11	25	37	3	16
83	Virginia	4	5	638	556	80	224	10	6	4	6	4	3	2
84	All other <sup>2</sup>	4	4	1,546	996	550	165	9	1	1	5	3	3	3
<b>MARBLE.</b>														
85	New York	6	6	107	97	10	115	9	1	1	6	2	5	1
86	Tennessee	13	17	1,244	997	255	590	37	19	18	19	18	7	6
87	Vermont	15	25	9,448	8,408	1,040	610	10	3	6	3	6	1	16
88	All other <sup>3</sup>	14	14	18,170	2,316	15,854	576	40	6	3	18	14	2	10

PRINCIPAL EXPENSES.

	Total.	Salaries and wages.			Supplies and materials.	Cost of fuel.	Cost of purchased power.	Royalties and rents.	Taxes—Federal, state, county, and local.	Contract work.	
		Salaried officials, superintendents, managers, and technical employees.	Clerks and other subordinate salaried employees.	Wage earners.							
1	United States—All industries.	\$33,091,301	\$5,358,198	\$1,810,117	\$45,534,798	\$18,441,450	\$5,267,846	\$2,213,450	\$1,381,290	\$2,068,170	\$995,976
2	Limestone	45,280,704	2,614,748	1,111,845	23,928,333	10,968,220	2,997,433	1,278,958	987,751	1,119,861	685,587
3	Granite	14,107,461	933,082	214,364	8,587,650	2,593,040	333,636	261,135	139,302	377,646	118,637
4	Sandstone	8,173,578	636,308	300,337	4,448,511	1,664,432	587,358	280,969	121,970	195,369	54,161
5	Basalt	7,983,689	598,187	153,090	3,991,307	2,030,589	563,337	157,161	280,199	198,613	41,406
6	Slate	4,914,091	341,487	67,798	3,128,240	632,450	328,954	188,506	187,788	73,233	95,633
7	Marble	2,661,848	191,396	62,723	1,452,440	552,439	147,644	76,741	34,280	123,503	20,582
<b>LIMESTONE.</b>											
8	Alabama	1,216,632	83,140	34,797	663,914	306,537	94,479	17,532	5,058	8,334	2,941
9	Arizona	145,172	6,000	2,200	41,941	16,090	1,152	7,310	122	122	70,367
10	Arkansas	206,563	32,749	1,920	92,009	52,498	15,272	600	10,540	2,965	1,000
11	California	499,621	27,019	16,520	289,693	122,176	16,861	18,746	1,000	6,106	1,500
12	Colorado	502,734	14,109	5,206	279,758	78,558	14,108	3,428	4,350	5,000	102,717
13	Florida	151,730	13,366	1,071	81,651	34,399	9,902	4,438	5,583	720	1,000
14	Georgia	143,787	22,316	1,655	59,337	23,056	8,294	9,364	5,059	381	14,326
15	Illinois	3,152,121	283,175	116,634	1,447,647	835,598	231,915	158,063	34,501	45,598	1,000
16	Indiana	3,417,832	374,746	142,062	1,767,636	700,469	214,987	112,222	31,974	66,274	7,472
17	Iowa	509,801	29,464	25,910	282,561	108,008	37,009	8,872	15,315	2,672	1,000
18	Kansas	786,509	33,529	31,263	500,783	128,655	38,822	8,284	20,034	6,009	19,130
19	Kentucky	885,915	44,314	8,405	526,099	215,319	65,073	9,249	7,557	8,233	1,666
20	Maryland	206,626	5,284	7,580	128,148	42,430	14,085	1,738	2,995	3,216	1,000
21	Minnesota	267,963	13,978	5,397	158,665	27,642	11,747	9,267	9,306	8,069	23,292
22	Missouri	1,983,730	145,401	40,540	1,181,826	364,251	126,078	68,527	20,717	18,826	19,664
23	Montana	194,213	7,734	3,624	110,806	55,678	7,114	6,820	1,000	2,437	1,000
24	New Jersey	449,648	19,923	3,966	255,293	109,198	37,580	480	14,053	8,535	330
25	New York	4,034,313	245,288	78,895	2,109,671	1,119,461	177,672	169,800	47,125	87,843	8,956
26	Ohio	5,414,548	316,871	193,330	2,327,159	1,339,768	494,038	200,673	64,009	358,289	120,421
27	Oklahoma	497,419	56,361	48,172	210,489	117,656	40,167	2,625	2,625	5,029	1,000
28	Oregon	140,429	4,350	60,868	63,083	7,109	269	3,926	824	824	1,000
29	Pennsylvania	11,596,884	371,936	148,866	6,824,164	2,758,379	559,646	255,957	294,488	247,700	194,748
30	Tennessee	443,352	49,179	3,823	243,393	96,398	29,658	7,354	9,735	3,430	1,882
31	Utah	280,619	15,347	1,031	187,171	41,139	5,488	7,227	2,000	1,216	1,000
32	Vermont	76,021	4,816	35,793	24,490	5,690	990	990	990	990	1,000
33	Virginia	1,395,645	49,834	24,213	682,902	437,142	117,151	15,496	28,908	27,653	12,446
34	West Virginia	1,682,907	62,786	30,243	979,624	419,472	69,933	58,213	11,884	51,312	1,000
35	Wisconsin	951,980	77,314	25,893	533,189	158,011	70,439	48,920	10,987	21,064	6,263
36	All other <sup>4</sup>	4,036,940	204,330	106,601	1,864,142	1,178,649	375,963	76,504	49,817	127,779	58,155

<sup>1</sup> Includes enterprises in states as follows: Delaware, 1; Idaho, 1; Michigan, 1; New York, 4; Rhode Island, 4; Texas, 1; Wisconsin, 2.

<sup>2</sup> Same number reported for one or more other months.

<sup>3</sup> Includes enterprises in states as follows: Maine, 3; Utah, 1.

<sup>4</sup> Includes enterprises in states as follows: Alabama, 2; California, 3; Georgia, 1; Maryland, 2; Massachusetts, 3; Michigan, 1; Missouri, 1; Texas, 1.

INDUSTRIES, BY STATES, PRODUCING ENTERPRISES: 1919—Continued.

PERSONS ENGAGED IN INDUSTRY—continued.																						
Wage earners.				Wage earners, Dec. 15, or nearest representative day.												Capital.						
Average number.	Number 15th day of—				Total.		Foremen, bosses, etc.		Enginemen, hoistmen, etc.		Quarrymen, drillmen, etc.		Trackmen, men engaged in hauling, etc.		Muckers, laborers, and others not classified.		In mills and dressing plants (above ground).	Under 16 years of age (above ground).	Females (above ground).			
	Maximum month.	Minimum month.	Maximum month.	Minimum month.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.	Above ground.	Below ground.						
262	No	327	Fe	155	337		14		38		75		36		174						\$1,367,933	70
363	Jy	406	Fe	277	408		17		55		124		20		190		2				2,976,389	71
133	Je	249	Ja	60	218		9		13		71				125						336,217	72
547	Se	708	Fe	267	596		17		57		143		24		340						1,026,570	73
637	Jy	808	Fe	352	721		26		91		221		1		374		8				1,373,890	74
124	Se	214	Ja	58	173		9		24		33		35		72						477,054	75
721	My	862	Ja	499	710		28		121		212		49		268		32		2		3,552,049	76
99	Oc	168	Fe	33	153		6		7		100				40						183,113	77
400					498		19		67		136		27		245						1,606,006	78
85	Fe <sup>a</sup>	98	My	60	84	21	1	2	13	1	36	11	4		19	7	11				652,142	79
134	De	200	Mh	65	159	40	11	2	23		19	18	6		45	20	58				461,680	80
1,892	Oc	2,106	Ja	1,373	1,724	340	48	16	168		321	270	127	33	500	21	560				2,829,629	81
1,039	Jy	1,180	Au	871	994	208	65	8	128	2	404	148	7		160	50	230	4			2,212,813	72
210	Au	237	Ja	162	155	71	3	3	19		20	14	49	21	64	33					289,024	83
153					126	61	5	5	20		12	27	7		4	19	73				477,904	84
100	Au <sup>a</sup>	128	Ja	51	128		7		15		48		20		25		13				416,076	85
540	Jy	596	Fe	462	599		19		22		169		12		157		210				1,604,393	86
570	My	614	Ja	506	599		20		33		341		9		18		178				3,627,551	87
522					540		20		80		205				107		128				3,386,602	88

Expenditures for development (included in principal expenses).	Value of product.	POWER USED.														ELECTRIC MOTORS RUN BY CURRENT GENERATED BY THE ENTERPRISE REPORTING.	
		Aggregate horse-power.	Prime movers.										Equipment operated by purchased power.		Number.		Horse-power.
			Total horse-power.	Steam engines (not turbines).		Steam turbines.		Internal-combustion engines.		Water wheels and turbines.		Electric motors.					
				Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.				
\$1,241,343	\$101,684,919	376,808	219,038	3,397	194,477	23	14,286	440	9,045	18	2,130	3,971	156,870	400	19,210	1	
764,673	62,943,924	213,717	138,387	1,776	109,778	17	10,701	253	5,043	9	865	2,046	87,330	367	11,421	2	
156,870	18,879,245	56,674	84,711	744	30,221	3	2,360	84	1,343	4	777	450	20,963	34	1,520	3	
96,555	10,684,969	33,989	21,197	340	19,061			71	2,118			396	12,678	155	4,696	4	
131,800	9,687,977	37,307	22,844	250	21,099	3	1,225	30	520			255	14,463	11	1,040	5	
60,531	5,730,792	20,613	8,778	196	8,699			1	8	2	101	428	11,835	4	44	6	
30,914	4,397,912	15,628	6,081	85	5,619			2	15	3	357	406	9,607	19	480	7	
26,239	1,340,961	5,457	3,030	48	3,630	2	300					26	1,537	4	160	8	
47,590	163,211	255	55					2	55			3	200			9	
	220,070	1,158	1,133	12	1,130			1	2			3	25	4	7	10	
13,488	540,987	1,778	156	2	80			4	76			40	1,622			11	
45,763	526,738	621	273	4	160			5	113			6	248			12	
	177,201	490	325	7	325							11	165			13	
	174,821	1,135	435	4	435							4	700			14	
13,483	3,776,626	22,325	11,260	161	9,125	5	1,963	18	282			222	10,966			15	
127,979	4,619,801	21,642	11,161	142	10,836	1	150	11	175			359	10,481	58	1,212	16	
19,001	476,650	3,991	2,486	38	2,433			9	52			30	1,606			17	
3,250	835,147	2,262	1,686	20	1,046			11	640			12	566	15	360	18	
1,500	1,126,109	4,485	3,569	55	3,229			12	240			26	916	4	240	19	
500	241,638	542	390	14	390							6	152			20	
3,324	311,180	1,694	606	14	599			1	6			33	989			21	
31,918	2,355,736	8,306	4,062	69	3,491			16	561			145	4,263	8	218	22	
11,250	191,887	1,260	235	2	125			1	40	2	70	15	1,065			23	
8,399	450,069	1,372	1,337	9	537	1	300					1	35			24	
19,577	4,697,942	22,370	10,243	147	9,963			12	275			237	12,127	18	1,195	25	
14,550	6,742,496	39,881	29,480	357	28,746			43	706	1	28	221	10,401	6	36	26	
	567,288	2,076	1,476	23	1,545			8	331			3	200			27	
	138,708	35	10					2	10			1	25			28	
199,199	12,981,213	30,155	15,641	378	14,816	1	275	55	800			358	14,514	9	226	29	
3,000	534,848	1,998	1,231	22	1,150	1	80	1	1	2	50	11	765			30	
3,000	291,234	360	75	3	80			1	15			3	285			31	
	76,152	483	408	6	408							3	78	5	195	32	
16,021	1,610,544	5,722	4,706	55	3,295	3	810	13	109	1	392	18	1,017	17	827	33	
2,530	1,927,490	6,873	2,833	56	2,821			1	12			35	3,540	4	120	34	
23,614	1,107,790	6,772	3,472	34	2,149			8	173	2	150	73	3,200	4	145	35	
129,508	4,940,397	19,901	14,225	94	7,349	3	6,333	17	363	1	175	142	5,676	93	5,847	36	

<sup>a</sup> Includes 60 horse-power for equipment operated by purchased compressed air, distributed as follows: Colorado, 5; Georgia, 30; Massachusetts, 5; Vermont, 20.  
<sup>b</sup> Includes enterprises in states as follows: Connecticut, 1; Idaho, 3; Louisiana, 1; Maine, 1; Massachusetts, 1; Michigan, 11; Nebraska, 8; Nevada, 1; North Carolina, 2; South Dakota, 3; Texas, 12; Wyoming, 8.

MINES AND QUARRIES.

TABLE 25.—DETAILED STATISTICS FOR THE STONE-QUARRYING

		PRINCIPAL EXPENSES.									
		Total.	Salaries and wages.			Supplies and materials.	Cost of fuel.	Cost of purchased power.	Royalties and rents.	Taxes—Federal, state, county, and local.	Contract work.
			Salaried officials, superintendents, managers, and technical employees.	Clerks and other subordinate salaried employees.	Wage earners.						
GRANITE.											
37	Arizona.....	\$107,359	\$3,000	.....	\$75,894	\$14,624	\$9,284	\$1,900	\$2,480	\$177	.....
38	California.....	411,528	41,050	\$11,977	167,992	148,179	14,898	18,743	7,785	7,654	\$250
39	Connecticut.....	185,811	33,384	5,115	102,821	18,819	14,153	.....	3,313	5,206	3,000
40	Georgia.....	803,834	47,209	8,883	536,599	84,311	65,909	21,216	34,390	5,317	.....
41	Maine.....	1,110,409	65,385	8,812	805,865	116,000	71,353	17,067	5,242	17,625	2,800
42	Maryland.....	448,659	25,861	6,441	269,741	76,836	49,897	1,222	12,509	3,607	2,535
43	Massachusetts.....	1,852,838	129,987	48,557	1,237,898	237,897	110,504	26,215	12,450	48,204	4,136
44	Minnesota.....	729,831	30,870	10,050	477,028	96,962	55,475	33,074	4,371	17,865	2,136
45	Montana.....	8,861	.....	.....	5,006	2,548	635	.....	600	72	.....
46	New Hampshire.....	1,061,838	76,871	9,541	744,023	110,782	37,956	23,413	1,060	23,672	34,530
47	New Jersey.....	60,708	3,400	.....	42,531	6,480	5,580	.....	2,242	495	.....
48	New York.....	147,045	13,333	2,403	87,561	28,408	6,388	5,861	1,449	1,642	.....
49	North Carolina.....	1,224,809	102,711	15,593	808,657	135,227	90,181	3,119	8,518	10,803	.....
50	Pennsylvania.....	343,621	19,055	4,624	237,481	43,396	20,585	1,730	12,336	3,774	640
51	Rhode Island.....	511,963	46,729	10,846	280,227	122,500	30,999	7,293	5,645	7,754	.....
52	South Carolina.....	634,433	74,137	13,293	278,162	199,372	199,372	24,687	3,762	7,278	.....
53	Vermont.....	2,579,823	127,743	21,109	1,225,256	778,489	135,472	39,379	7,609	182,786	61,980
54	Virginia.....	195,045	18,040	2,200	135,435	18,248	12,252	525	2,434	5,911	.....
55	Washington.....	71,194	4,942	351	50,303	6,110	6,668	1,783	190	847	.....
56	Wisconsin.....	1,194,482	108,245	30,759	759,599	208,146	37,817	23,748	5,067	23,101	.....
57	All other <sup>1</sup> .....	423,340	15,140	3,810	259,590	87,646	23,906	10,300	12,750	3,656	6,640
SANDSTONE.											
58	California.....	65,533	37	.....	39,041	20,202	669	1,631	2,300	1,653	.....
59	Colorado.....	38,840	.....	.....	14,903	3,791	400	48	304	329	19,065
60	Illinois.....	912,157	142,938	20,260	335,756	182,443	127,258	48,089	9,853	42,029	3,531
61	Kentucky.....	69,176	12,955	600	35,687	11,710	7,383	.....	71	770	.....
62	New Jersey.....	35,661	1,300	.....	27,209	1,218	3,500	.....	2,000	434	.....
63	New York.....	239,078	23,460	7,640	149,051	40,566	9,320	2,124	4,065	2,735	117
64	Ohio.....	1,675,129	136,988	80,042	965,151	288,567	92,720	22,927	15,869	47,991	24,934
65	Pennsylvania.....	3,034,748	161,984	54,583	1,688,674	686,265	215,423	82,622	58,206	75,007	2,484
66	South Dakota.....	158,961	8,710	3,294	98,303	35,850	3,689	6,905	1,175	1,335	.....
67	West Virginia.....	596,157	56,823	8,987	338,156	94,192	39,293	45,357	1,754	8,985	.....
68	Wisconsin.....	231,906	18,715	3,629	133,602	51,923	9,599	1,010	8,003	3,775	1,050
69	All other <sup>2</sup> .....	1,116,832	66,436	21,292	628,278	238,715	88,099	40,596	25,770	9,666	2,980
BASALT.											
70	California.....	601,924	46,737	9,206	334,460	128,746	10,520	39,266	16,938	16,051	.....
71	Connecticut.....	923,263	76,724	15,788	450,960	231,885	45,778	41,565	2,817	38,409	19,337
72	Maryland.....	344,278	18,613	5,542	186,210	92,260	28,492	1,200	3,416	8,545	.....
73	Massachusetts.....	1,265,216	115,160	20,245	719,596	229,244	65,117	40,849	44,183	30,822	.....
74	New Jersey.....	1,601,440	92,034	31,441	759,006	427,846	142,358	10,420	90,954	20,819	19,562
75	Oregon.....	347,152	20,577	4,840	189,123	102,114	21,591	3,121	2,238	3,548	.....
76	Pennsylvania.....	1,853,633	125,504	39,466	792,637	618,769	152,792	10,277	50,635	61,046	2,507
77	Washington.....	186,900	14,539	4,200	102,382	42,468	18,519	940	2,244	1,606	.....
78	All other <sup>3</sup> .....	859,823	81,269	22,362	456,933	157,537	77,660	9,523	36,774	17,765	.....
SLATE.											
79	Maryland.....	79,185	6,235	795	54,533	4,701	7,334	2,821	.....	2,766	.....
80	New York.....	254,843	8,867	1,630	135,826	60,436	10,239	25,765	2,206	6,391	3,453
81	Pennsylvania.....	2,564,734	176,296	32,589	1,655,062	297,941	164,461	42,334	110,931	33,168	52,033
82	Vermont.....	1,538,657	118,074	26,129	976,143	226,644	25,838	97,221	34,103	23,798	10,687
83	Virginia.....	206,894	16,790	2,719	152,491	7,453	16,497	.....	7,831	2,523	.....
84	All other <sup>4</sup> .....	270,458	15,226	3,906	154,174	35,284	4,585	20,464	2,717	4,622	29,480
MARBLE.											
85	New York.....	200,556	9,217	6,614	102,097	34,313	17,340	4,962	1,282	5,478	19,263
86	Tennessee.....	855,866	72,565	16,832	407,912	249,623	81,884	6,244	5,201	15,655	.....
87	Vermont.....	950,807	44,413	25,554	553,075	180,320	13,349	37,211	10,700	86,185	.....
88	All other <sup>5</sup> .....	654,619	65,201	13,723	389,356	88,183	35,121	28,334	17,197	16,185	1,319

<sup>1</sup> Includes enterprises in states as follows: Arkansas, 2; Colorado, 8; Delaware, 2; District of Columbia, 3; Missouri, 2; Oklahoma, 6; Oregon, 2; South Dakota, 1; Texas, 8.  
<sup>2</sup> Includes enterprises in states as follows: Alabama, 2; Arizona, 2; Arkansas, 7; Connecticut, 3; Idaho, 2; Indiana, 1; Maryland, 2; Massachusetts, 1; Michigan, 2; Minnesota, 1; Missouri, 4; Montana, 2; North Carolina, 1; Oklahoma, 2; Tennessee, 2; Utah, 2; Virginia, 2; Washington, 1; Wyoming, 3.

INDUSTRIES, BY STATES, PRODUCING ENTERPRISES: 1919—Continued.

Expenditures for development (included in principal expenses).	Value of product.	POWER USED.										ELECTRIC MOTORS RUN BY CURRENT GENERATED BY THE ENTERPRISE REPORTING.				
		Aggregate horse-power.	Prime movers.								Equipment operated by purchased power.					
			Total horse-power.	Steam engines (not turbines).		Steam turbines.		Internal-combustion engines.		Water wheels and turbines.				Electric motors.		
				Num-ber.	Horse-power.	Num-ber.	Horse-power.	Num-ber.	Horse-power.	Num-ber.	Horse-power.			Num-ber.	Horse-power.	Num-ber.
	\$128,777	417	252	3	40			6	212			3	165			37
88,250	563,485	2,479	257	12	201			3	31	1	25	60	2,222			38
	206,546	1,165	1,165	30	1,150			1	15					5	40	39
9,883	885,663	3,863	2,534	25	2,507			4	27			18	1,329			40
5,995	1,300,996	4,050	3,313	72	3,187			11	126			15	737			41
	495,651	2,393	2,258	34	1,450	1	750	3	58			4	135	13	775	42
6,441	2,405,165	6,580	4,737	149	4,707			2	30			49	1,843			43
15,735	1,135,391	3,675	1,770	48	1,620			5	150			42	1,905			44
1,000	12,944	75	75					3	75							45
14,814	1,427,979	4,121	2,458	64	2,415			4	43			49	1,663			46
	81,198	195	195	3	195											47
	173,404	2,208	808	16	803			1	5			18	1,400			48
5,000	1,576,250	2,025	1,890	35	1,890							4	135	12	155	49
18,700	435,654	1,232	852	30	768			9	84			5	380			50
11,200	733,683	2,460	1,520	49	1,520							21	940			51
	747,976	2,392	1,067	21	1,020			3	37			18	1,335			52
25,444	3,563,734	10,739	6,112	88	3,837	1	1,500	2	25	2	750	86	4,677			53
	259,599	650	600	9	600							1	50			54
3,000	74,958	246	176	4	136			2	40			6	70			55
6,892	1,484,979	2,850	1,175	26	1,175							33	1,675	4	560	56
25,316	585,343	1,809	1,507	26	1,010	1	110	25	385	1	2	18	302			57
	65,074	585	20					1	20			15	565			58
	45,723	87	83	2	83							1	4			59
16,450	1,329,389	3,806	1,916	31	1,774			14	142			70	1,890	8	341	60
	91,363	640	640	14	640									2	25	61
	46,775	89	89	4	74			1	15							62
5,625	301,315	1,234	961	16	842			10	139			6	253	8	233	63
19,499	2,759,352	5,431	3,529	36	3,419			5	110			47	1,902	96	2,222	64
39,411	3,534,563	10,844	8,268	149	7,057			28	1,211			100	2,576	20	1,165	65
	140,068	497	90	3	90							13	407			66
7,877	885,588	3,486	1,260	27	1,220			2	40			81	2,226			67
6,070	231,078	1,009	909	10	692			4	217			1	100			68
1,623	1,254,681	6,161	3,412	48	3,190			6	222			52	2,749	21	710	69
	125	635,588	4,792	460	17	425		1	35			88	4,332			70
6,266	1,262,579	6,254	2,720	26	2,705			2	15			41	3,534	3	4	71
	369,075	1,285	1,210	14	1,210							1	75			72
10,750	1,548,611	4,721	2,165	31	2,165							39	2,556	1	10	73
25,995	1,928,025	6,340	5,298	51	5,011	1	125	14	162			20	1,042			74
	420	294,812	1,285	692	18	686		1	6			10	593			75
85,254	2,298,791	6,058	5,147	53	5,000			6	147			28	911			76
	240,742	1,020	980	10	845			3	135			2	40			77
3,000	1,079,764	5,552	4,172	39	3,052	2	1,100	3	20			26	1,380	7	1,035	78
	2,847	76,683	408	270	7	270						12	133			79
1,500	445,027	2,022	212	5	212							44	1,810			80
36,717	2,651,533	9,678	7,393	155	7,385			1	8			95	2,285			81
10,555	2,067,888	6,447	458	12	357					2	101	237	5,989	4	44	82
2,000	203,088	445	445	14	445											83
6,912	287,093	1,618										38	1,618			84
	249,296	495	275	9	275							8	220			85
2,500	1,088,131	3,885	3,135	32	3,115			1	3	1	17	15	750	7	200	86
600	2,108,872	7,354	910	7	690					1	220	310	6,444	9	245	87
27,914	951,623	3,894	1,701	37	1,539			1	12	1	150	75	2,193	3	35	88

\* Includes enterprises in states as follows: Delaware, 1; Idaho, 1; Michigan, 1; New York, 4; Rhode Island, 4; Texas, 1; Wisconsin, 2.  
 † Includes enterprises in states as follows: Maine, 3; Utah, 1.  
 ‡ Includes enterprises in states as follows: Alabama, 2; California, 3; Georgia, 1; Maryland, 2; Massachusetts, 3; Michigan, 1; Missouri, 1; Texas, 1.



# PHOSPHATE ROCK.

## INTRODUCTION.

This report presents the results of the census of mines and quarries for the year 1919 relating to the phosphate-rock mining industry. It includes statistics showing the progress of the industry by comparison of results of the 1919 census with those of the preceding censuses of mines and quarries; also, for 1919, statistics showing character of organization of operating enterprises, scale of operation, persons engaged in the industry, acreage of mineral and other lands controlled, power equipment used, and a general table presenting statistics in detail for the United States and for such states as can be shown without disclosure of individual operations.

**Definitions and explanations.**—Phosphate rock is a natural phosphate of lime which occurs in several forms known in Florida and South Carolina as "hard rock," or "land pebble," and by other names; in Kentucky and Tennessee as "brown rock" and "blue rock;" and also simply as rock phosphate. Phosphate rock is mined principally for use as fertilizer and as an ingredient of manufactured fertilizers. Other uses in metallurgical and chemical industries are relatively unimportant. It is disposed of by the producers, either as crude rock as it is mined, or as washed or otherwise cleaned and selected material, or ground. Some enterprises producing phosphate rock are engaged simply in mining or digging the rock, others operate beneficiating plants also. The statistics herein presented cover both the mining proper and the cleaning or other beneficiation practiced by the operators.

Phosphate rock is obtained by hand digging, by steam-shovel operation, by open-cut quarrying, by dredging, by hydraulic mining, and by underground mining. Underground mining and quarrying are practiced chiefly in the Central and Western states; and the other methods of operation, only in the South Atlantic states.

The phosphate-rock resources of the United States include deposits in the coastal region of South Carolina; the central counties of Florida; western Kentucky and Tennessee; and very extensive bedded deposits in Montana, Idaho, Utah, and Wyoming. The principal sources of production of phosphate rock in the United States have been Florida, South Carolina, and Tennessee. Much of the production has been for export trade, which prior to the war amounted to nearly

half of the total annual domestic output. On account of the war and the discovery or development of foreign phosphate-rock resources, the export trade and the production in the United States have decreased very largely since the preceding census. European demand for phosphate rock was renewed in 1919 and the phosphate-rock mining industry recovered somewhat from the depression of the years 1914 to 1918. In Florida, the leading producing state, long-continued labor troubles during 1919 resulted in decreased production as compared with the preceding year. For the reasons herein set forth the statistics covering the phosphate-rock mining industry during the year 1919 are not fairly representative of that industry.

**Method of reporting quantity and value of products.**—The statistics on production of phosphate rock were collected in cooperation with the United States Geological Survey, and there was provided, in addition to the general schedule of the Bureau of the Census, a supplemental schedule requesting special information for the Geological Survey. The latter desired the quantity of phosphate rock mined and the quantity and selling value f. o. b. mines of the phosphate rock shipped, that is, sold or used. The Bureau of the Census required only the value of the products mined during the year, and the value of products reported by this bureau is estimated on the basis of the average selling value of the rock shipped. The Geological Survey has tabulated as the value of phosphate rock produced in 1919 the value of the material shipped, that is, the marketed production, which includes considerable phosphate rock from stock previously mined. This largely accounts for the difference in value of products as reported by the Bureau of the Census and the Geological Survey. The difference in quantity mined as reported by the two bureaus is due to different methods in tabulating reports from certain operators who included with mined output the sales of phosphate rock from stock and gave as the value of mined product the combined value of all materials shipped. The Geological Survey has excluded such quantities from its report of rock mined.

Table 1 shows, by states and kinds of rock, the quantity mined and the quantity and value of phosphate rock sold in 1919, as reported by the Geological Survey, and Table 2 presents both the Bureau of the Census and the Geological Survey figures on quantity and value of phosphate rock produced in 1919.



TABLE 1.—PHOSPHATE ROCK MINED AND SOLD IN THE UNITED STATES, BY STATES: 1919.<sup>1</sup>

STATE.	MINED.	MINED AND SOLD.		
	Quantity (tons, 2,240 pounds).	Quantity (tons, 2,240 pounds).	Value.	Average value per ton.
UNITED STATES.....	1,851,549	2,271,983	\$11,591,268	\$5.10
FLORIDA.....	1,254,809	1,680,200	7,797,929	4.70
Hard rock.....		285,467	2,452,563	8.59
Soft rock.....		14,498	196,318	13.54
Land pebble.....		1,380,235	5,149,048	3.79
SOUTH CAROLINA.....	49,032	60,823	308,968	5.08
Land rock.....		60,823	308,968	5.08
TENNESSEE AND KENTUCKY.....	530,973	534,025	3,414,516	6.39
Brown rock.....		475,475	3,123,565	6.57
Blue rock.....		58,550	290,951	4.97
WESTERN STATES <sup>2</sup> .....	16,935	16,935	69,855	4.12

<sup>1</sup> U. S. Geological Survey, Mineral Resources of the United States: 1919.  
<sup>2</sup> Includes Idaho, Utah, and Wyoming.

TABLE 2.—COMPARISON OF REPORTS ON PRODUCTION, BUREAU OF THE CENSUS AND UNITED STATES GEOLOGICAL SURVEY: 1919.

STATE.	BUREAU OF THE CENSUS.		GEOLOGICAL SURVEY.		
	Total value of all products.	Phosphate rock mined.		Phosphate rock mined and sold.	
		Quantity (tons, 2,240 pounds).	Value.	Quantity (tons, 2,240 pounds).	Value.
United States.....	\$10,300,198	1,988,975	\$10,292,990	2,271,983	\$11,591,268
Florida.....	6,678,888	1,404,299	6,673,888	1,680,200	7,797,929
South Carolina, Tennessee, and Kentucky.....	3,551,755	567,665	3,549,547	594,848	3,723,494
Western states <sup>1</sup> .....	69,555	17,011	69,555	16,935	69,855

<sup>1</sup> Includes Idaho and Utah, and in the Geological Survey statistics also Wyoming.

PRINCIPAL STATISTICS.

The phosphate-rock mining industry ranked eleventh among the mining industries of the United States in 1919 on the basis of total value of all products—\$10,300,198; and on the basis of average number of wage earners employed—4,373—the industry ranked tenth. There were 39 operators of producing phosphate-rock mines during the year who reported for 48 enterprises embracing 69 mines. These operators produced 1,988,975 long tons of phosphate rock valued at \$10,292,990 and reported other receipts from mining operations amounting to \$7,208.

Table 3 presents for the United States as a whole, and separately for such states as can be shown, the principal statistics for producing phosphate-rock enterprises in 1919. Only one operation for development without production was reported during the census year, and statistics for this enterprise are not here shown because to combine them with those for the producing enterprises would impair the value of these and to show them separately would disclose the individual

operation. Therefore, the data are not included in this report but will be combined with other nonproducing enterprises in the general tables for the United States.

TABLE 3.—PRINCIPAL STATISTICS, PRODUCING ENTERPRISES: 1919.

	United States.	Florida.	Tennessee.	South Carolina and Kentucky.	Idaho and Utah.
Number of enterprises.....	48	23	19	3	3
Number of mines.....	69	40	23	3	3
Mineral land operated (acres)	160,447	108,925	23,452	26,785	1,285
Persons engaged.....	4,761	2,585	1,674	459	43
Proprietors and firm members.....	14	5	5	2	2
Salaried employees.....	374	250	101	19	4
Wage earners (average number).....	4,373	2,330	1,568	438	37
Power used (aggregate horsepower).....	49,639	40,996	7,168	1,275	200
Capital.....	\$72,733,956	\$55,740,488	\$14,657,494	\$1,665,961	\$670,013
Principal expenses:					
Salaries.....	\$761,428	\$549,971	\$174,808	\$28,729	\$7,920
Wages.....	\$3,900,966	\$2,372,141	\$1,174,759	\$300,083	\$54,033
Contract work.....	\$103,696	\$115,262	\$35,431	.....	\$13,018
Supplies and materials.....	\$2,161,501	\$1,455,370	\$638,533	\$59,800	\$7,798
Fuel and purchased power.....	\$1,819,301	\$1,347,785	\$380,932	\$99,061	\$1,523
Royalties and rents.....	\$209,637	\$128,834	\$70,583	\$10,300	.....
Taxes.....	\$347,580	\$275,354	\$68,423	\$8,475	\$328
Total value of all products.....	\$10,300,198	\$6,678,888	\$3,139,671	\$412,084	\$69,555
Phosphate rock—					
Quantity (tons, 2,240 pounds).....	1,988,975	1,404,299	489,639	78,026	17,011
Value.....	\$10,292,990	\$6,678,888	\$3,137,463	\$412,084	\$69,555

GEOGRAPHIC DISTRIBUTION.

Statistics relating to the phosphate-rock mining industry can be shown separately for only the two leading states, Florida and Tennessee. Statistics for South Carolina and Kentucky and for Idaho and Utah are combined in order to avoid disclosure of individual operations. Table 3 shows the principal statistics, and Table 4 the rank, by the per cent distribution of the average number of wage earners and value of products, for these states and groups of states. The South Atlantic region leads in this industry with products valued at more than two-thirds and wage earners numbering more than half of the totals for the United States. Nearly one-third of the industry, as measured by the value of products or number of wage earners, was located in the East South Central region, and a very small remainder in the Western Mountain region.

TABLE 4.—STATES, RANKED BY VALUE OF PRODUCTS, PRODUCING ENTERPRISES: 1919.

STATE.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.
United States.....	48	4,373	100.0	\$10,300,198	100.0
Florida.....	23	2,330	53.3	6,678,888	64.8
Tennessee.....	19	1,568	35.9	3,139,671	30.5
South Carolina and Kentucky.....	3	438	10.0	412,084	4.0
Idaho and Utah.....	3	37	0.8	69,555	0.7

PROGRESS OF THE INDUSTRY.

Comparative statistics for producing mines in the United States: 1889-1919.—Table 5 presents for producing phosphate-rock mining enterprises in the United States the principal statistics reported at the Fourteenth Census and the three preceding censuses of mines and quarries. This table indicates large

increase in the phosphate-rock mining industry during the two decades 1889-1909. In contrast, the statistics for 1919 and 1909 show decreases in the number of enterprises, mines, persons engaged, and in the value of products; the increase in the principal expenses is merely nominal on account of the general price increases during the decade.

TABLE 5.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919, 1909, 1902, AND 1889.

	1919	1909	1902	1889	PER CENT OF INCREASE. <sup>1</sup>		
					1909-1919.	1902-1909.	1889-1902.
Number of enterprises.....	48	71	87	( <sup>2</sup> )	.....	.....	.....
Number of mines.....	69	153	115	( <sup>2</sup> )	-54.9	33.0	.....
Persons engaged.....	4,761	8,260	.....	.....	-42.4	.....	.....
Proprietors and firm members.....	14	17	( <sup>2</sup> )	( <sup>2</sup> )	.....	.....	.....
Salaried employees.....	374	370	391	( <sup>2</sup> )	1.1	-5.4	.....
Wage earners (average number).....	4,373	7,873	5,971	5,011	-44.5	31.9	19.2
Power used (aggregate horsepower).....	49,639	50,526	14,229	( <sup>2</sup> )	-1.8	265.1	.....
Capital.....	\$72,733,956	\$30,642,656	( <sup>2</sup> )	\$6,131,718	137.4	.....	.....
Principal expenses:							
Salaries.....	761,423	590,990	\$355,204	1,209,151	25.8	66.4	.....
Wages.....	3,900,966	3,215,661	1,930,083	.....	21.3	66.6	.....
Contract work.....	163,666	251,849	157,402	115,930	-36.0	60.0	35.8
Supplies and materials.....	2,161,501	898,657	479,414	317,159	140.5	.....	.....
Fuel and purchased power.....	1,819,301	1,360,368	( <sup>2</sup> )	( <sup>2</sup> )	33.7	.....	.....
Royalties and rents.....	209,687	345,568	212,350	( <sup>2</sup> )	-39.3	62.7	.....
Taxes.....	347,580	86,859	( <sup>2</sup> )	( <sup>2</sup> )	300.2	.....	.....
Value of products.....	10,300,198	10,781,192	4,922,943	2,987,776	-4.5	119.0	67.6

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.  
<sup>2</sup> Not reported.

<sup>3</sup> Comparable figures not available.  
<sup>4</sup> Includes cost of fuel.

Table 6 shows the production of phosphate rock marketed annually from 1889 to 1920 as reported by the United States Geological Survey. These statistics show great progress in the industry until 1913 but a decline during the war period. The depression in the year 1919, as indicated by these statistics, was due to a diminished foreign market and labor difficulties.

TABLE 6.—MARKETED PRODUCTION OF PHOSPHATE ROCK: 1889 TO 1920.<sup>1</sup>

YEAR.	Quantity (tons, 2,240 pounds).	Value.	YEAR.	Quantity (tons, 2,240 pounds).	Value.
1889.....	560,245	\$2,937,776	1905.....	1,947,190	\$6,763,403
1890.....	510,499	3,213,795	1906.....	2,080,957	8,579,437
1891.....	587,988	3,651,150	1907.....	2,265,348	10,053,558
1892.....	681,671	3,296,327	1908.....	2,386,138	11,399,124
1893.....	941,368	4,136,070	1909.....	2,338,264	10,796,456
1894.....	996,949	3,479,547	1910.....	2,654,088	10,917,000
1895.....	1,088,551	3,606,094	1911.....	3,053,379	11,900,693
1896.....	980,779	2,803,372	1912.....	2,973,332	11,675,774
1897.....	1,039,345	2,673,302	1913.....	3,111,321	11,796,231
1898.....	1,308,885	3,453,460	1914.....	2,734,043	9,608,041
1899.....	1,515,702	5,084,076	1915.....	1,835,967	5,413,449
1900.....	1,491,216	5,359,248	1916.....	1,982,385	5,896,993
1901.....	1,488,723	5,316,403	1917.....	2,584,287	7,771,084
1902.....	1,490,314	4,693,444	1918.....	2,490,760	8,214,463
1903.....	1,581,576	5,319,394	1919.....	2,271,983	11,591,268
1904.....	1,874,428	6,580,375	1920.....	4,103,982	25,079,573

<sup>1</sup> U. S. Geological Survey, "Mineral Resources of the United States."

Power per enterprise and per wage earner: 1919 and 1909.—Table 7 presents comparative statistics for 1919 and 1909 regarding the power used and shows that

while there was a slight decrease in the aggregate horsepower used, this was due to decrease in the number of enterprises, as the horsepower per enterprise shows increase. The horsepower per wage earner in the enterprises operated during 1919 was nearly double the horsepower per wage earner in 1909. There is thus indicated some progress in the industry through relatively larger use of mechanical equipment.

TABLE 7.—POWER USED PER ENTERPRISE AND PER WAGE EARNER: 1919 AND 1909.

	1919	1909	Per cent of increase. <sup>1</sup>
Number of enterprises.....	48	71	.....
Wage earners (average number).....	4,373	7,873	-44.5
Power used (aggregate horsepower).....	49,639	50,526	-1.8
Horsepower per enterprise.....	1,034	712	45.2
Horsepower per wage earner.....	11	6	.....

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

CHARACTER OF ORGANIZATION.

The character of organization of operating enterprises in the phosphate-rock mining industry in the United States as a whole is shown in Table 8. More than four-fifths of the enterprises were corporations, which employed 92.8 per cent of the average number of wage earners and reported 92.7 per cent of the total value of products. Other enterprises conducted by individuals and firms were relatively small.

TABLE 8.—CHARACTER OF ORGANIZATION, PRODUCING ENTERPRISES: 1919.

CHARACTER OF ORGANIZATION.	Number of enterprises.	Wage earners (average number).	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Amount.	Per enterprise.	Enterprises.	Wage earners (average number).	Value of products.
All classes.....	48	4,373	\$10,300,198	\$214,587	100.0	100.0	100.0
Corporation.....	39	4,068	9,546,209	244,775	81.2	92.8	92.7
Individual.....	4	96	187,858	46,964	8.3	2.2	1.8
Firm.....	5	220	566,131	113,226	10.4	5.0	5.5

SCALE OF OPERATION.

Size of enterprises according to value of products.—Table 9 gives, for the United States as a whole and for Florida and Tennessee separately, the number of enterprises and value of products, with per cent distribution, for enterprises grouped according to the value of their products. The largest enterprises, those producing products valued at more than \$500,000, numbered only 7, or one-seventh of the total number, but produced more than half the total value of products.

TABLE 9.—SIZE OF PRODUCING ENTERPRISES, BY VALUE OF PRODUCTS: 1919.

STATE AND VALUE OF PRODUCTS PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.	
	Number.	Per cent distribution.	Amount.	Per cent distribution.
UNITED STATES.....	48	100.0	\$10,300,198	100.0
Less than \$20,000 <sup>1</sup> .....	8	16.7	66,217	0.6
\$20,000 to \$100,000.....	16	33.3	897,741	8.7
\$100,000 to \$500,000.....	17	35.4	4,062,511	39.3
\$500,000 and over <sup>2</sup> .....	7	14.6	5,283,729	51.3
FLORIDA.....	23	100.0	6,678,888	100.0
Less than \$100,000 <sup>3</sup> .....	7	30.4	429,171	6.4
\$100,000 to \$500,000.....	11	47.8	2,417,068	36.2
\$500,000 and over <sup>4</sup> .....	5	21.7	3,832,649	57.4
TENNESSEE.....	19	100.0	3,139,671	100.0
Less than \$20,000 <sup>1</sup> .....	6	31.6	47,544	1.5
\$20,000 to \$100,000.....	6	31.6	294,783	9.4
\$100,000 and over <sup>4</sup> .....	7	36.8	2,797,344	89.1

<sup>1</sup> Includes the group "Less than \$5,000."  
<sup>2</sup> Includes the group "\$1,000,000 to \$5,000,000."  
<sup>3</sup> Includes the group "\$5,000 to \$20,000."  
<sup>4</sup> Includes the group "\$500,000 to \$1,000,000."

Size of enterprises according to average number of wage earners employed.—Table 10 shows, for the United States as a whole, and for states and groups of states, the enterprises classified according to the average number of wage earners employed. In the United States as a whole, 1 enterprise employed no wage earners, and 33 had fewer than 101 wage earners each and employed only 26.7 per cent of the wage earners. The larger enterprises, that is, those employing more than 100 wage earners each, numbered 14 and employed 73.2 per cent of the wage earners. These enterprises were in Florida, South Carolina, and Tennessee.

TABLE 10.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS: 1919.

STATE AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS (AVERAGE NUMBER).	
	Number.	Per cent distribution.	Number.	Per cent distribution.
UNITED STATES.....	48	100.0	4,373	100.0
No wage earners.....	1	2.1	.....	.....
1 to 5.....	2	4.2	9	0.2
6 to 20.....	10	20.8	122	2.8
21 to 50.....	11	22.9	360	8.2
51 to 100.....	10	20.8	670	15.5
101 to 500.....	14	29.2	3,203	73.2
FLORIDA.....	23	100.0	2,330	100.0
6 to 20.....	3	13.0	41	1.8
21 to 50.....	7	30.4	247	10.6
51 to 100.....	6	26.1	366	15.7
101 to 500.....	7	30.4	1,676	71.9
TENNESSEE.....	19	100.0	1,588	100.0
No wage earners.....	1	5.3	.....	.....
1 to 5.....	2	10.5	9	0.6
6 to 20.....	4	21.1	44	2.8
21 to 50.....	4	21.1	113	7.2
51 to 100.....	3	15.8	246	15.7
101 to 500.....	5	26.3	1,186	73.7
SOUTH CAROLINA AND KENTUCKY.....	3	100.0	438	100.0
51 to 100.....	1	33.3	67	15.3
101 to 500.....	2	66.7	371	84.7
IDAHO AND UTAH.....	3	100.0	37	100.0
6 to 20.....	3	100.0	37	100.0

Size of enterprises according to acreage of mineral land.—In Table 11 the enterprises are classified according to the number of acres of mineral land operated, and for each group the number of mines and the number of acres operated are shown. The largest number of enterprises was in the class operating the largest holdings of mineral land—1,000 acres and over—and the next largest number was in the class operating from 200 to 500 acres each. Practically 80 per cent of the enterprises were in classes operating more than 200 acres each and together they reported 99.5 per cent of the total acreage.

TABLE 11.—SIZE OF PRODUCING ENTERPRISES, BY NUMBER OF ACRES OF MINERAL LAND: 1919.

ACRES PER ENTERPRISE.	ENTERPRISES.		Number of mines.	MINERAL LAND.	
	Number.	Per cent distribution.		Acres.	Per cent distribution.
All classes.....	48	100.0	69	160,447	100.0
1 to 50.....	5	10.4	7	106	0.1
50 to 100.....	2	4.2	3	185	0.1
100 to 200.....	3	6.2	11	459	0.3
200 to 500.....	10	20.8	12	3,430	2.1
500 to 1,000.....	6	12.5	6	4,849	3.0
1,000 and over.....	22	45.8	31	151,418	94.4

PERSONS ENGAGED IN THE INDUSTRY.

Persons according to class and sex.—Table 12 shows the persons engaged in the phosphate-rock

mining industry by classes, showing the number of males and females and the per cent distribution. The salaried employees, numbering 374, constituted only 7.8 per cent of the total number of persons engaged in the industry. Only 31 females, representing seven-tenths of 1 per cent of the total number of persons employed, were reported among the salaried employees. Twenty-three female wage earners, or four-tenths of 1 per cent of all wage earners, were reported working on the representative day.

TABLE 12.—PERSONS ENGAGED IN THE INDUSTRY, PRODUCING ENTERPRISES: 1919.

	Number.	Per cent of total.
Persons engaged.....	4,761	100.0
Proprietors and firm members..... male..	14	0.3
Salaried officers..... male..	43	0.9
Superintendents and managers..... male..	106	2.2
Technical employees..... male..	60	1.3
Clerks.....		
Male.....	134	2.8
Female.....	31	0.7
Wage earners (average number).....	4,373	91.9
Wage earners, December 15, or nearest representative day..	5,913	100.0
Male.....	5,860	99.6
Female.....	23	0.4
Wage earners under 16 (included above).....	1	.....

Wage earners, by occupations.—Table 13 shows the number of wage earners, employed on December 15 or the nearest representative day, classified according to occupation, gives the per cent distribution for each occupational class, and also the number in each class employed above ground and below ground. The table distinguishes between men engaged in the more peculiarly mining occupations, such as miners, quarrymen, drillmen, timbermen, trackmen, trammers, and their helpers; men in other skilled trades such as enginemen, hoistmen, firemen, machinists, electricians, carpenters, and other mechanics; and less skilled and unclassified laborers. The table shows that 94.4 per cent of the total number of wage earners were engaged in mining operations proper, and that 5.6 per cent were employed in beneficiating plants. Only 2.5 per cent of the total number were employed below ground.

TABLE 13.—WAGE EARNERS, BY OCCUPATIONS, PRODUCING ENTERPRISES: 1919.

CLASS OF WAGE EARNERS.	NUMBER OF WAGE EARNERS DEC. 15 OR NEAREST REPRESENTATIVE DAY.			
	Total.	Per cent distribution.	Above-ground.	Below-ground.
All classes.....	5,913	100.0	5,764	149
Foremen, shift bosses, etc.....	294	5.0	291	3
Enginemen, hoistmen, electricians, mechanics, etc.....	1,154	19.5	1,154	.....
Miners, quarrymen, and drillmen, including their helpers.....	1,084	18.3	968	116
Timbermen, trackmen, and men engaged in hauling, tramping, etc.....	450	7.6	443	7
Muckers, loaders, laborers, and others not classified.....	2,600	44.0	2,577	23
Wage earners employed in mills and beneficiating plants.....	331	5.6	331	.....

Wage earners, by months.—Table 14 shows, for the United States as a whole and for states and groups of states, the number of wage earners employed on the 15th day, or the nearest representative day, of each month and the average number of wage earners, and also indicates the months of minimum and maximum employment, and shows the ratio of the minimum to the maximum number. The changes in the number employed from month to month reflect conditions prevailing in the phosphate-rock industry during the census year. The numbers for Florida, which largely affect the totals for the United States, were unusual for the months from May to September and were due to strikes. These statistics for 1919 are therefore not representative of the industry.

It will be noted that the number of wage earners reported for all enterprises on the representative day, which is presented in several other tables, aggregated 5,913, or somewhat more than the number shown in Table 14 for December 15, which was the largest number reported for the 15th day of any month. While for most mines the representative day selected for reporting wage earners in detail was December 15, for other mines for which December was not a representative month, reports were made for some other date. Therefore, the aggregate for the representative day differs from the total of the numbers reported by each enterprise for the month of December.

TABLE 14.—WAGE EARNERS, BY MONTHS, PRODUCING ENTERPRISES: 1919.

[The month of maximum employment for each state is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

STATE.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States.....	4,373	4,583	4,865	4,741	4,972	3,250	<i>2,902</i>	3,419	3,873	4,094	4,639	5,358	<b>5,771</b>	50.3
Florida.....	2,330	2,867	2,937	2,852	2,955	1,179	<i>814</i>	1,277	1,649	1,870	2,553	3,190	<b>3,617</b>	21.3
Tennessee.....	1,568	<i>1,301</i>	1,493	1,458	1,577	1,649	1,624	1,657	<b>1,733</b>	1,695	1,577	1,633	1,419	75.1
South Carolina and Kentucky.....	438	<i>396</i>	414	413	421	401	428	448	444	470	463	463	475	82.0
Idaho and Utah.....	37	19	21	18	19	30	36	37	47	59	46	52	<b>60</b>	30.0



Table 18 presents comparative statistics for 1919 and 1909 pertaining to the acreage of mineral land and other lands controlled. There was notable decrease in both mineral and other lands reported, but a particularly large decrease in the acres of mineral land operated under lease. These decreases are in accord with the decrease in the number of mines operated as explained in the discussion of Table 5.

TABLE 18.—COMPARATIVE STATISTICS, LAND CONTROLLED, PRODUCING ENTERPRISES: 1919 AND 1909.

CHARACTER AND TENURE OF LAND.	ACRES.		
	1919	1909	Per cent of increase. <sup>1</sup>
Total land .....	241, 610	340, 697	-29. 0
Mineral land.....	160, 447	243, 221	-34. 0
Owned.....	156, 418	230, 405	-32. 1
Leased.....	4, 029	12, 816	-68. 6
Timber and other lands.....	81, 363	97, 476	-16. 5

<sup>1</sup> A minus sign (-) denotes decrease.

**Royalties.**—The census of 1919 did not distinguish between royalties or rents paid for mineral land, and rents of other kinds, but, as these other rents are generally insignificant, statistics presented on royalties and rents may, where mineral lands are leased, be taken to cover only royalties or rents of mineral land. Royalty, which is a compensation for the privilege of mining leased lands, is either a fixed share of the product or a percentage of the value of product.

Table 19, in which the enterprises are classified according to form of land tenure, shows for each class the number of enterprises, the value of products, and the royalties and rents paid. Approximately three-fourths of the enterprises operated only owned land and reported only a small amount of rents, probably for buildings, equipment, easements, or privileges. The enterprises operating on leased land and on land partly owned and partly leased reported royalties amounting to 7.6 per cent of the value of their products.

TABLE 19.—VALUE OF PRODUCTS AND ROYALTIES AND RENTS, FOR PRODUCING ENTERPRISES, CLASSIFIED ACCORDING TO TENURE OF MINERAL LAND: 1919.

CLASSES OF ENTERPRISES.	Number of enterprises.	Value of products.	Royalties and rents.
All classes .....	48	\$10, 300, 193	\$209, 687
Enterprises operating:			
Only owned land.....	35	8, 197, 622	50, 917
Only land held under lease.....	9	869, 094	139, 271
Land partly owned and partly held under lease.....	4	1, 233, 482	19, 499

**POWER.**

**Power equipment used.**—The number and horsepower of the several types of prime movers and of electric motors used by the phosphate-rock producing

enterprises in 1919 are presented for the United States as a whole and separately for states, in so far as they can be shown without disclosure, in the table of detailed statistics. Comparative statistics for 1919 and 1909 are presented for the United States as a whole in Table 20 which shows the number and horsepower of the power equipment used by producing enterprises and the per cent of increase or decrease. The table shows a slight decrease in the aggregate horsepower used, which, as indicated in the section on progress of the industry, is due to the decrease in the number of enterprises reporting. This decrease in aggregate horsepower was brought about by a decrease in horsepower of prime movers used, which was nearly offset by the increase in horsepower of electric motors operated by purchased current. A notable increase in the use of electrically driven equipment is shown by the increases in horsepower of electric motors operated by both current purchased and current generated by the enterprise reporting.

TABLE 20.—COMPARATIVE STATISTICS, POWER USED, PRODUCING ENTERPRISES: 1919 AND 1909.

	1919	1909	Per cent of increase. <sup>1</sup>
Power used: Aggregate horsepower.....	49, 630	50, 536	-1. 8
Prime movers (total horsepower).....	46, 976	50, 426	-6. 3
Steam engines—			
Number.....	117	540	-78. 7
Horsepower.....	24, 801	46, 817	-25. 5
Internal-combustion engines—			
Number.....	44	32	37. 5
Horsepower.....	12, 085	3, 000	294. 9
Equipment operated by purchased power (total horsepower).....	2, 663	100	2, 563. 0
Electric motors—			
Number.....	38	1	3, 652. 6
Horsepower.....	2, 663	100	2, 563. 0
Electric motors run by current generated by the enterprise reporting:			
Number.....	320	339	-5. 6
Horsepower.....	33, 107	21, 368	54. 8

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

**GENERAL TABLE.**

Table 21 is a detailed presentation for 1919 of the statistics for phosphate-rock producing enterprises in the United States as a whole and separately by states in so far as they can be shown without disclosure of individual operations. As but one phosphate-rock mining enterprise reported operations for development only, statistics for nonproducing operations can not be shown in this table. The table gives the number of enterprises, and mines, and the number of enterprises operating beneficiating plants; acreage of land controlled according to character and the tenure of mineral land; the capital invested; the principal expenses of operation and development; the persons engaged in the industry by classes and the wage earners according to occupation; and statistics with regard to number and horsepower of power equipment, and with regard to fuel used.

TABLE 21.—DETAILED STATISTICS FOR THE PHOSPHATE-ROCK MINING INDUSTRY, BY STATES: 1919.

	PRODUCING ENTERPRISES.				
	Total.	Florida.	Tennessee.	South Carolina and Kentucky.	Idaho and Utah.
Number of enterprises.....	48	23	19	3	3
Number of mines.....	69	40	23	3	3
Number of enterprises operating beneficiating plants.....	20	8	10	2	.....
Mineral land operated..... acres.....	160,447	108,926	23,452	26,785	1,285
Land controlled, total..... acres.....	241,810	188,002	26,738	26,785	1,285
Mineral land owned..... acres.....	156,418	106,685	22,073	26,375	1,285
Mines all land held under lease..... acres.....	4,029	2,240	1,379	410	.....
Timber and other lands..... acres.....	81,363	79,077	2,286	.....	.....
Capital.....	\$72,733,956	\$55,740,488	\$14,657,494	\$1,665,961	\$670,013
Principal expenses.....	\$9,364,154	\$6,244,717	\$2,538,424	\$496,398	\$84,615
Salaries and wages—					
Officers, superintendents, managers, and technical employees.....	\$566,477	\$419,376	\$120,111	\$19,820	\$7,170
Clerks, etc.....	\$194,946	\$130,505	\$54,692	\$5,909	\$750
Wage earners.....	\$3,900,966	\$2,372,141	\$1,174,769	\$300,033	\$54,033
Supplies and materials.....	\$2,161,501	\$1,455,370	\$638,533	\$59,800	\$7,796
Fuel.....	\$1,739,833	\$1,277,999	\$379,182	\$81,817	\$935
Purchased power.....	\$79,468	\$69,736	\$1,750	\$7,244	\$688
Royalties and rents.....	\$209,687	\$128,834	\$70,553	\$10,300	.....
Taxes—Federal, state, county, and local.....	\$347,590	\$275,354	\$63,423	\$8,475	\$328
Contract work.....	\$163,666	\$115,262	\$35,421	.....	\$13,033
Expenditures for development (included in principal expenses).....	\$353,237	\$301,881	\$32,065	\$16,211	\$3,080
Value of products.....	\$10,300,198	\$6,678,888	\$3,130,671	\$412,084	\$69,555
Persons engaged in industry.....	4,761	2,585	1,674	459	43
Proprietors and officials.....	223	149	59	10	5
Proprietors and firm members.....	14	5	5	2	2
Salaried officers.....	43	27	16	.....	.....
Superintendents and managers.....	106	65	31	7	3
Technical employees.....	69	52	7	1	.....
Clerks, etc.—					
Male.....	134	87	38	3	1
Female.....	31	19	9	3	.....
Wage earners (average number).....	4,373	2,330	1,568	438	37
Wage earners, number 15th day of—					
Maximum month.....	Dec. 5,771	Dec. 3,817	Aug. 1,783	Nov. 488	Dec. 69
Minimum month.....	June 2,902	June 814	Jan. 1,301	Jan. 396	Mar 18
Wage earners by occupations, Dec. 15, or nearest representative day—					
Above ground (total).....	5,764	3,808	1,456	478	27
Below ground (total).....	149	.....	115	.....	34
Foremen, shift bosses, etc.—					
Above ground.....	291	227	48	16	.....
Below ground.....	3	.....	2	.....	1
Engineers, hoistmen, electricians, mechanics, etc.—					
Above ground.....	1,154	918	189	47	.....
Miners, quarrymen, and drillmen, including their helpers—					
Above ground.....	968	603	294	71	.....
Below ground.....	116	.....	90	.....	28
Timbermen, trackmen, and men engaged in hauling, tramping, etc.—					
Above ground.....	443	203	162	78	.....
Below ground.....	7	.....	7	.....	.....
Munkers, loaders, laborers, and others not classified—					
Above ground.....	2,577	1,686	639	225	27
Below ground.....	23	.....	16	.....	7
Wage earners employed in mills and beneficiating plants—					
Above ground.....	331	166	124	41	.....
Number of wage earners under 16 years of age included in those reported above:					
Above ground.....	1	.....	1	.....	.....
Number of females included in wage earners reported above:					
Above ground.....	23	23	.....	.....	.....
Power used: Aggregate horsepower.....	49,639	40,996	7,168	1,275	200
Prime movers (horsepower, total).....	46,976	38,881	7,070	1,025	.....
Steam engines, not turbines—					
Number.....	100	27	55	18	.....
Horsepower.....	17,140	9,095	7,020	1,025	.....
Steam turbines—					
Number.....	17	17	.....	.....	.....
Horsepower.....	17,751	17,751	.....	.....	.....
Internal-combustion engines—					
Number.....	44	43	1	.....	.....
Horsepower.....	12,085	12,085	50	.....	.....
Equipment operated by purchased power (horsepower, total).....	2,663	2,115	98	250	200
Electric motors—					
Number.....	38	23	5	6	4
Horsepower.....	2,663	2,115	98	250	200
Electric motors run by current generated by the enterprise reporting:					
Number.....	320	253	63	4	.....
Horsepower.....	33,107	31,115	1,792	200	.....
Fuel used:					
Coal, anthracite..... tons, 2,240 pounds.....	28	.....	.....	.....	28
Coal, bituminous..... tons, 2,000 pounds.....	121,273	19,621	88,029	13,623	.....
Coke..... tons, 2,000 pounds.....	146	146	.....	.....	.....
Wood..... cords.....	39,961	32,022	5,679	2,260	.....
Fuel oils..... barrels.....	657,284	657,039	245	.....	.....
Gasoline and other volatile oils..... barrels.....	10,871	10,786	42	.....	43

# GYPSUM.

## INTRODUCTION.

This report presents the results of the census of mines and quarries for the year 1919 relating to the production of gypsum. It includes statistics showing the progress of the industry by comparison of results of the 1919 census with those of the preceding censuses of mines and quarries; also statistics for 1919 showing the character of organization of operating enterprises, scale of operation, persons engaged in the industry, acreage of mineral and other lands controlled, power equipment used, and a general table presenting statistics in detail for the United States, and separately for such states as can be shown without disclosure of individual operations.

**Definitions and explanations.**—Gypsum, either in the form of massive or rock gypsum, or the earthy material gypsite, is the raw material mined for use in the manufacture of plaster of Paris; wall plaster; stucco; plaster board and wall board; partition, roof, and other tiles; Portland cement; and as agricultural gypsum. Gypsum is sometimes sold crude; more often sold calcined as plaster; for the most part, however, it is not sold crude, or simply calcined, but is used by the producer in the manufacture of gypsum products and enters the market only in manufactured form. The principal producers of gypsum operate mills or manufacturing plants at the gypsum mines and quarries. The statistics herein presented relate primarily to the gypsum-mining industry with which is included the calcining of gypsum and its preparation for further manufacture. Returns were received from some producers reporting separately the mining activities of the business, and from other producers making combined reports on mining and manufacturing activities. The latter were, so far as possible, segregated so that mining and manufacturing statistics could be separately tabulated. For some establishments insufficient information was available for such segregation, and in these cases the full reports covering both mining and manufacturing activities have been included in the statistics of the gypsum-mining industry.

Gypsum is obtained both by quarrying or mining in open pits and by mining under ground. Either method may be practiced in any region as the thickness of the overburden chiefly determines the method of operation.

The gypsum resources of the United States include deposits in the east in New York, Virginia, Ohio, and Michigan; in the western Mississippi Valley in Iowa, South Dakota, Kansas, Oklahoma, and Texas; and in the western region in Arizona, California, Colorado, Montana, Nevada, New Mexico, Oregon, Utah, and Wyoming.

**Method of reporting quantity and value of products.**—The statistics relating to the production of gypsum were collected in cooperation with the United States Geological Survey, for which purpose there was provided, in addition to the general schedule for the census, a supplemental schedule requesting special information desired by the Geological Survey. These schedules called for the quantity and value at the mine of gypsum produced and also for the quantity and value at the mill of gypsum in gypsum products manufactured and in gypsum products used or sold. The Census Bureau required the value of products at the mine or plant; the Geological Survey, the total quantity mined and the quantity and value of gypsum sold or used by the producer. The value of products as reported by the two bureaus for 1919 are compared in the following statement:

	Bureau of the Census.	Geological Survey.
United States.....	\$6,805,940	\$15,727,907
New York.....	1,110,463	3,530,748
Iowa.....	1,022,920	2,684,444
All other states.....	4,602,557	9,562,720

<sup>1</sup> Includes Arizona, California, Colorado, Kansas, Michigan, Nevada, New Mexico, Ohio, Oklahoma, Oregon, South Dakota, Texas, Utah, Virginia, and Wyoming for both bureaus' figures; the Geological Survey figures include also the production of Alaska and Montana and a small quantity of gypsum sold by warehouses.

Practically all of the differences here shown are accounted for by the fact that the Geological Survey reports as value of products the value of gypsum sold as such and gypsum in manufactured products sold or used by the producer, while the Bureau of the Census reports the value to the producer of his output, whether raw or calcined gypsum or gypsum products.

As the Bureau of the Census did not tabulate the quantity of gypsum produced in 1919, available information is limited to that contained in the United States Geological Survey's publication "Mineral Resources of the United States: 1919," from which Table 1 is quoted.



TABLE 1.—GYPSUM PRODUCED AND SOLD IN THE UNITED STATES, BY STATES: 1919.<sup>1</sup>

STATE.	Number of plants reporting.	Total quantity mined (tons, 2,000 pounds).	SOLD WITHOUT CALCINING.				SOLD AS CALCINED PLASTER.		Total value.
			Agricultural gypsum.		For Portland cement, paint, and other purposes.		Quantity (tons, 2,000 pounds).	Value.	
			Quantity (tons, 2,000 pounds).	Value.	Quantity (tons, 2,000 pounds).	Value.			
United States.....	57	2,420,163	39,978	\$185,566	470,267	\$1,332,637	1,566,020	\$14,209,704	\$15,727,907
Iowa.....	6	421,279	2,405	8,760	66,619	222,672	264,656	2,408,012	2,684,444
Kansas.....	3	78,479	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	<sup>2</sup> 66,008	<sup>2</sup> 520,673	520,673
Michigan.....	6	339,125	1,597	10,422	57,157	163,688	250,687	2,216,257	2,390,367
Nevada.....	3	91,756	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	<sup>2</sup> 79,181	<sup>2</sup> 497,561	497,561
New York.....	8	591,153	5,458	23,984	210,950	506,355	316,767	2,910,404	3,530,743
Ohio.....	3	251,250	1,435	6,363	6,390	20,373	219,900	2,022,987	2,049,723
Oklahoma.....	5	114,313	( <sup>2</sup> )	( <sup>2</sup> )	24,761	63,920	<sup>2</sup> 72,013	<sup>2</sup> 644,740	705,660
Texas.....	5	178,607	( <sup>2</sup> )	( <sup>2</sup> )	10,637	16,442	<sup>2</sup> 130,656	<sup>2</sup> 1,064,312	1,080,764
Wyoming.....	3	51,079	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	37,314	282,587	282,587
All other states <sup>3</sup> .....	15	305,113	24,902	128,940	69,662	193,794	187,101	1,709,761	2,032,395

<sup>1</sup> U. S. Geological Survey, Mineral Resources of the United States: 1919.<sup>2</sup> Crude gypsum is included with calcined plaster.<sup>3</sup> Includes Alaska, Arizona, California, Colorado, Montana, New Mexico, Oregon, South Dakota, Utah, and Virginia; and also a small quantity sold by warehouses and not accounted for elsewhere.

## PRINCIPAL STATISTICS.

Table 2 presents by states and groups of states the principal statistics for producing gypsum mines in 1919. No activities on unproductive properties were reported for that year. On the basis of total value of products—\$6,805,940—this industry ranked fifteenth, and on the basis of average number of wage earners employed—2,191—it ranked fourteenth among the mining industries in the United States in 1919.

TABLE 2.—PRINCIPAL STATISTICS, PRODUCING ENTERPRISES: 1919.

	United States.	New York.	Other eastern states. <sup>1</sup>	Iowa.	Western states. <sup>2</sup>
Number of enterprises.....	47	6	8	5	28
Number of mines.....	48	6	8	5	29
Mineral land operated.. acres.	41,708	2,471	5,788	1,519	31,980
Persons engaged.....	2,477	446	694	487	850
Proprietors and firm members, total.....	4	1	.....	.....	3
Number performing manual labor.....	3	1	.....	.....	2
Salaried employees.....	282	45	73	43	121
Wage earners (average number).....	2,191	400	621	444	726
Power used (aggregate horsepower).....	15,032	1,706	5,179	2,057	6,090
Capital.....	\$13,541,548	\$1,559,514	\$4,816,157	\$2,124,006	\$5,041,871
Principal expenses:					
Salaries.....	555,450	78,923	152,756	85,467	238,304
Wages.....	2,478,391	515,650	709,035	495,747	757,959
Contract work.....	3,747	.....	.....	.....	3,747
Supplies and materials.....	1,530,338	263,914	421,754	206,180	638,490
Fuel and purchased power.....	660,420	84,498	171,798	132,600	271,548
Royalties and rents.....	69,403	31,946	14,032	21,021	2,404
Taxes.....	81,983	9,576	23,976	7,546	40,885
Value of all products.....	6,805,940	1,110,463	1,857,633	1,092,920	2,744,924

<sup>1</sup> Includes enterprises in states listed in order of value of products as follows: Michigan, 4; Virginia, 2; Ohio, 2.<sup>2</sup> Includes enterprises in states listed in order of value of products as follows: Nevada, 3; Texas, 3; Wyoming, 4; Oklahoma, 5; Kansas, 3; Utah, 2; New Mexico, 1; Oregon, 1; Arizona, 1; South Dakota, 2; Colorado, 2; California, 1.

There were 25 operators during the census year who reported for 47 enterprises and 48 mines. Three operators reported a majority of the enterprises, and each of these three operated in various parts of

the United States. As the industry is so largely controlled by a few operators, analysis of the statistics can not be presented in detail without disclosure of individual operations.

## GEOGRAPHIC DISTRIBUTION.

Statistics can be shown separately for only the two leading states, New York and Iowa; other producing states are grouped as "Other eastern states" and as "Western states." Table 2 shows the principal statistics for these states and groups of states, and Table 3 shows the rank by the per cent distribution of the value of products and average number of wage earners for these states and groups. On the basis of value of products New York and Iowa, with six and five enterprises, respectively, each accounted for approximately one-sixth of the production. Measured either by value of products or by average number of wage earners, the region west of the Mississippi River was the most important in the industry, reporting 56.4 per cent of the total value of products and 53.4 per cent of the total average number of wage earners.

TABLE 3.—STATES, RANKED BY VALUE OF PRODUCTS, PRODUCING ENTERPRISES: 1919.

STATE.	Number of enterprises.	WAGE EARNERS.		VALUE OF PRODUCTS.	
		Average number.	Per cent distribution.	Amount.	Per cent distribution.
United States.....	47	2,191	100.0	\$6,805,940	100.0
New York.....	6	400	18.3	1,110,463	16.3
Iowa.....	5	444	20.3	1,092,920	16.1
Other eastern states <sup>1</sup> .....	8	621	28.3	1,857,633	27.3
Western states <sup>2</sup> .....	28	726	33.1	2,744,924	40.3

<sup>1</sup> Includes states listed in order of value of products as follows: Michigan, Virginia, Ohio.<sup>2</sup> Includes states listed in order of value of products as follows: Nevada, Texas, Wyoming, Oklahoma, Kansas, Utah, New Mexico, Oregon, Arizona, South Dakota, Colorado, California.

PROGRESS OF THE INDUSTRY.

Comparative statistics for producing enterprises in the United States: 1889-1919.—Table 4 presents, for producing gypsum enterprises in the United States as a whole, the principal statistics reported at the Fourteenth Census and the three preceding censuses of mines and quarries. This table indicates large increase in the gypsum-mining industry during the two decades 1889 to 1909. The average number of wage earners in 1909 was more than four times the number in 1889 and the value of products increased nearly 700 per cent. In contrast to this progress, the statistics show decreases, during the decade 1909 to 1919, in the number of enterprises, mines, persons engaged,

and power used; the increases shown for wages, cost of supplies and materials and fuel and power, and value of products are in accord with these decreases because they are less than sufficient to offset the general price increases during the decade. These figures should be interpreted, not as indicating an actual decline in the industry, but rather as a measure of the effect on the gypsum industry of business depression during the census year. The Geological Survey's annual figures on the production of gypsum, as presented in Table 5, show a large growth in the industry from 1889 up to 1917, when it was checked by the war's effect on construction work in which gypsum products are largely used.

TABLE 4.—COMPARATIVE SUMMARY, PRODUCING ENTERPRISES: 1919, 1909, 1902, AND 1889.

	1919	1909	1902	1889	PER CENT OF INCREASE. <sup>1</sup>		
					1909-1919	1902-1909	1889-1902
Number of enterprises.....	47	78	45	( <sup>2</sup> )			
Number of mines.....	48	222	62	( <sup>2</sup> )	-78.4		
Persons engaged.....	2,477	3,809			-36.5		
Proprietors and firm members, total.....	4	6	( <sup>2</sup> )	( <sup>2</sup> )			
Number performing manual labor.....	3	4	( <sup>2</sup> )	( <sup>2</sup> )			
Salaried employees.....	282	431	249	( <sup>2</sup> )	-34.6	73.1	
Wage earners (average number).....	2,191	3,462	1,473	761	-36.7	135.2	93.4
Power used (aggregate horsepower).....	15,032	17,685	7,319	( <sup>2</sup> )	-15.0	141.6	
Capital.....	\$13,541,548	\$10,213,284	( <sup>2</sup> )	\$2,473,175	32.6		
Principal expenses:							
Salaries.....	555,450	551,889	\$300,420	249,200	0.6	83.7	
Wages.....	2,478,391	1,820,877	750,258		36.1	139.8	
Contract work.....	3,747	16,558	406	10,031	-77.4		
Supplies and materials.....	1,580,338	986,658	* 341,760	128,354	53.1		
Fuel and purchased power.....	660,420	573,459	( <sup>2</sup> )	( <sup>2</sup> )	15.2		
Royalties and rents.....	69,403	74,916	49,912	( <sup>2</sup> )	-7.4	50.1	
Taxes.....	81,983	39,062	( <sup>2</sup> )	( <sup>2</sup> )	109.9		
Value of products.....	6,805,940	5,812,810	2,089,341	764,118	17.1	173.2	173.4

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.  
<sup>2</sup> Not reported.

<sup>3</sup> Comparable figures not available.  
<sup>4</sup> Includes cost of fuel.

TABLE 5.—CRUDE GYPSUM MINED IN THE UNITED STATES: 1889 TO 1919.<sup>1</sup>

YEAR.	Quantity (tons, 2,000 pounds).	YEAR.	Quantity (tons, 2,000 pounds).	YEAR.	Quantity (tons, 2,000 pounds).	YEAR.	Quantity (tons, 2,000 pounds).	YEAR.	Quantity (tons, 2,000 pounds).	YEAR.	Quantity (tons, 2,000 pounds).
1889.....	267,769	1895.....	235,503	1900.....	594,462	1905.....	1,043,202	1910.....	2,379,057	1915.....	2,447,611
1890.....	152,995	1896.....	224,254	1901.....	633,791	1906.....	1,540,535	1911.....	2,323,970	1916.....	2,757,730
1891.....	205,126	1897.....	253,952	1902.....	816,473	1907.....	1,751,743	1912.....	2,500,757	1917.....	2,696,226
1892.....	256,259	1898.....	291,638	1903.....	1,041,704	1908.....	1,721,529	1913.....	2,569,503	1918.....	2,057,015
1893.....	253,615	1899.....	486,235	1904.....	940,917	1909.....	2,252,785	1914.....	2,476,455	1919.....	2,420,168

<sup>1</sup> U. S. Geological Survey, Mineral Resources of the United States.

Power per enterprise and per wage earner: 1919 and 1909.—Table 6 presents comparative statistics for 1919 and 1909 in regard to power used. Although there was a decrease in the average number of wage earners and in the aggregate horsepower used in the gypsum industry in 1919 as compared with 1909, the horsepower per enterprise and the horsepower per wage earner increased 41 and 40 per cent, respectively, during that decade. Progress or development in the industry is indicated by increased use of mechanical equipment.

TABLE 6.—POWER USED PER ENTERPRISE AND PER WAGE EARNER, PRODUCING ENTERPRISES: 1919 AND 1909.

	1919	1909	Per cent of increase. <sup>1</sup>
Number of enterprises.....	47	78	
Wage earners (average number).....	2,191	3,462	-36.7
Power used (aggregate horsepower).....	15,032	17,685	-15.0
Horsepower per enterprise.....	320	227	41.0
Horsepower per wage earner.....	7	5	

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

## CHARACTER OF ORGANIZATION.

The character of organization of operating enterprises in the gypsum-mining industry in the United States as a whole is shown in Table 7. Forty-three of the 47 enterprises were operated by corporations which employed 99.3 per cent of the average number of wage earners and reported 99.7 per cent of the total value of products; the other enterprises were conducted by individuals and were small.

TABLE 7.—CHARACTER OF ORGANIZATION, PRODUCING ENTERPRISES: 1919.

CHARACTER OF ORGANIZATION.	Number of enterprises.	Wage earners (average number).	VALUE OF PRODUCTS.		PER CENT DISTRIBUTION.		
			Total.	Per enterprise.	Enterprises.	Wage earners (average number).	Value of products.
All classes.....	47	2,191	\$6,806,940	\$144,807	100.0	100.0	100.0
Corporation.....	43	2,176	6,782,826	157,740	91.5	99.3	99.7
Individual.....	4	15	23,114	5,779	8.5	0.7	0.3

## SCALE OF OPERATION.

Size of enterprises according to value of products.—In Table 8 the gypsum-producing enterprises in the United States in 1919 are grouped according to the value of their products, and the value of products and the per cent distribution is given for each group. The largest enterprises, although less than one-half the total number of enterprises, produced 85.1 per cent of the total value of products.

TABLE 8.—SIZE OF PRODUCING ENTERPRISES, BY VALUE OF PRODUCTS: 1919.

VALUE OF PRODUCTS PER ENTERPRISE.	ENTERPRISES.		VALUE OF PRODUCTS.	
	Number.	Per cent distribution.	Amount.	Per cent distribution.
All classes.....	47	100.0	\$6,806,940	100.0
Less than \$5,000.....	3	6.4	5,042	0.1
\$5,000 to \$20,000.....	5	10.6	69,164	1.0
\$20,000 to \$100,000.....	18	38.3	941,620	13.8
\$100,000 and over <sup>1</sup> .....	21	44.7	5,970,114	85.1

<sup>1</sup> Includes the group "\$500,000 to \$1,000,000."

Size of enterprises according to the average number of wage earners employed.—Table 9 shows, for the United States as a whole, and separately for the leading states and groups of states, the enterprises classified according to the average number of wage earners employed. In the United States as a whole, 41 of the total of 47 enterprises had fewer than 101 wage earners each and employed 55.9 per cent of the total average number of wage earners. Six enterprises had more than 100 wage earners each and employed 44.1 per cent of the total average number of wage earners. The larger enterprises—that is, those employing an average of more than 100 wage earners each—were in Iowa, New York, and other eastern states.

TABLE 9.—SIZE OF PRODUCING ENTERPRISES, BY AVERAGE NUMBER OF WAGE EARNERS: 1919.

STATE AND WAGE EARNERS PER ENTERPRISE.	ENTERPRISES.		WAGE EARNERS.	
	Number.	Per cent distribution.	Average number.	Per cent distribution.
UNITED STATES.....	47	100.0	2,191	100.0
1 to 5.....	4	8.5	11	0.5
6 to 20.....	14	29.8	190	8.7
21 to 50.....	15	31.9	506	23.1
51 to 100.....	8	17.0	518	23.6
101 to 500.....	6	12.8	966	44.1
NEW YORK.....	6	100.0	400	100.0
1 to 5.....	1	16.7	1	0.2
6 to 20.....	1	16.7	15	3.8
21 to 50.....	1	16.7	40	10.0
51 to 100.....	1	16.7	59	14.8
101 to 500.....	2	33.3	285	71.2
IOWA.....	5	100.0	444	100.0
6 to 20.....	1	20.0	9	2.0
21 to 50.....	2	40.0	78	17.6
101 to 500.....	2	40.0	357	80.4
OTHER EASTERN STATES.....	8	100.0	621	100.0
6 to 20.....	1	12.5	19	3.1
21 to 50.....	2	25.0	86	13.8
51 to 100.....	3	37.5	182	30.9
101 to 500.....	2	25.0	324	52.2
WESTERN STATES.....	28	100.0	726	100.0
1 to 5.....	3	10.7	10	1.4
6 to 20.....	11	39.3	147	20.2
21 to 50.....	10	35.7	302	41.6
51 to 100.....	4	14.3	267	36.8

Size of enterprises according to acreage of mineral land.—Table 10 shows, for the United States as a whole, the enterprises classified according to the number of acres of mineral land controlled and shows for each class the number of mines and the number of acres controlled. The largest number of enterprises was in the group operating from 100 to 200 acres, and this group, constituting 29.8 per cent of the total number of enterprises, operated only 5.3 per cent of the total acreage. The group controlling more than 1,000 acres per enterprise was the next largest, embracing 25.5 per cent of the total number of enterprises and controlling 76.6 per cent of the total number of acres of mineral land reported.

TABLE 10.—SIZE OF PRODUCING ENTERPRISES, BY NUMBER OF ACRES OF MINERAL LAND: 1919.

ACRES PER ENTERPRISE.	ENTERPRISES.		Number of mines.	MINERAL LAND.	
	Number.	Per cent distribution.		Acres.	Per cent distribution.
All classes.....	47	100.0	48	41,708	100.0
1 to 50.....	2	4.3	2	26	0.1
50 to 100.....	4	8.5	4	314	0.8
100 to 200.....	14	29.8	14	2,202	5.3
200 to 500.....	8	17.0	8	2,556	6.1
500 to 1,000.....	7	14.9	7	4,665	11.2
1,000 and over.....	12	25.5	13	31,940	76.6

## PERSONS ENGAGED IN THE INDUSTRY.

Persons according to class and sex.—Table 11 gives the persons engaged in the gypsum industry by classes, showing the number of males and females and the per cent distribution for each class of employees. The number of salaried employees—282—

constituted only 11.4 per cent of the total number of persons engaged in the industry. Only 60 females were reported in all grades and they constituted less than 3 per cent of the total number of persons employed.

TABLE 11.—PERSONS ENGAGED IN THE INDUSTRY, PRODUCING ENTERPRISES: 1919.

	Number.	Per cent distribution.
Persons engaged.....	2,477	100.0
Proprietors and firm members, total (male).....	4	0.2
Number performing manual labor.....	3	0.1
Salaried officers (male).....	28	1.1
Superintendents and managers—		
Male.....	65	2.6
Female.....	1	( <sup>1</sup> )
Technical employees (male).....	5	0.2
Clerks—		
Male.....	125	5.4
Female.....	48	1.9
Wage earners (average number).....	2,191	88.5
Wage earners, Dec. 15, or nearest representative day—		
Male.....	2,545	
Female.....	11	

<sup>1</sup> Less than one-tenth of 1 per cent.

Wage earners, by occupations.—Table 12 shows the number of wage earners employed in the gypsum industry on December 15, 1919, or the nearest representative day, classified according to occupation, gives the per cent distribution by occupational classes, and the number in each class employed above and below ground. Wage earners in quarries or open-pit mines were classed as employed above ground. The table distinguishes between men engaged in the more peculiarly mining occupations, such as miners, quarrymen, drillmen, timbermen, trackmen, trammers, and their helpers; men in other skilled trades such as engine-men, hoistmen, firemen, machinists, electricians, carpenters and other mechanics; and less skilled and unclassified laborers. Forty-six per cent of the total number of wage earners were employed below ground; exclusive of those in beneficiating plants, 67.5 per cent of the number in all classes were employed below ground. Of the total number of wage earners reported, 68 per cent were engaged in actual mining operations; 32 per cent being employed in mills or beneficiating plants in which the gypsum was calcined or further prepared for manufacture.

TABLE 12.—WAGE EARNERS, BY OCCUPATIONS, PRODUCING ENTERPRISES: 1919.

CLASS OF WAGE EARNERS.	NUMBER OF WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.			
	Total.	Per cent distribution.	Above ground.	Below ground.
All classes.....	2,556	100.0	1,381	1,175
Foremen, shift bosses, etc.....	77	3.0	37	40
Enginemen, hoistmen, electricians, mechanics, etc.....	145	5.7	105	40
Miners, quarrymen, and drillmen, including their helpers.....	604	23.6	159	445
Timbermen, trackmen, and men engaged in hauling, tramping, etc.....	223	9.1	25	208
Muckers, loaders, laborers, and others not classified.....	681	26.6	239	442
Wage earners employed in mills and beneficiating plants.....	816	31.9	816	.....

Wage earners, by months.—Table 13 shows for the United States as a whole, and for the principal states and groups of states, the number of wage earners employed on the 15th day or nearest representative day of each month, the average number, the months of minimum and maximum employment, and the ratio of the minimum to the maximum number. The changes in the number employed from month to month reflect conditions prevailing in the gypsum industry during the census year. The month of maximum employment for the industry was November, and the month of minimum employment January, and the minimum number employed was 58 per cent of the maximum number.

It will be noted that the number of wage earners reported for all enterprises on a representative day, which is presented in several other tables, aggregated 2,556, or somewhat more than the number shown for December 15 in Table 13. While for most mines the representative day selected for reporting wage earners in detail was December 15, for other mines December was not a representative month and reports were made for some other date. Therefore, the aggregate for the representative day differs from the total of the numbers reported by each enterprise for the month of December.

TABLE 13.—WAGE EARNERS BY MONTHS, PRODUCING ENTERPRISES: 1919.

[The month of maximum employment for each state is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

STATE.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States.....	2,191	<i>1,574</i>	1,649	1,782	1,918	2,078	2,092	2,350	2,327	2,582	2,713	<b>2,715</b>	2,512	58.0
New York.....	400	<i>350</i>	359	378	372	383	366	368	<i>340</i>	435	475	<b>504</b>	470	67.5
Iowa.....	444	<i>233</i>	240	272	330	389	453	540	545	611	<b>619</b>	613	483	37.6
Other Eastern states.....	621	<i>424</i>	498	522	562	613	604	666	666	674	<b>754</b>	725	684	64.2
Western states.....	726	<i>507</i>	552	610	654	693	669	776	776	862	865	<b>873</b>	875	57.9

**Prevailing hours of labor.**—Table 14 shows the enterprises classified according to the prevailing hours of labor per week and gives the average number of wage earners employed in each class. In the industry as a whole, for a majority of the enterprises and for 60 per cent of the wage earners employed, the hours of labor were 54 to 62 per week, that is, the 10-hour day and 6-day week prevailed. In Iowa, however, the prevailing hours of labor were 44 to 53 per week, and the 8-hour day and 6-day week was the rule.

TABLE 14.—NUMBER OF PRODUCING ENTERPRISES AND AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR: 1919.

STATE.	TOTAL.		NUMBER WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
	Enterprises.	Wage earners.	36 to 43.		44 to 53.		54 to 62.		63 to 71.	
			Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.	Enterprises.	Wage earners.
United States.....	47	2,191	1	1	12	830	32	1,317	2	43
New York.....	6	400	.....	.....	1	143	5	257	.....	.....
Iowa.....	5	444	.....	.....	5	444	.....	.....	.....	.....
Other eastern states.....	8	621	.....	.....	1	161	7	460	.....	.....
Western states.....	28	726	1	1	5	82	20	600	2	43

**LAND TENURE AND ROYALTIES.**

**Land tenure.**—Table 15 shows for 1919 the number of acres of land controlled by producing enterprises. The table distinguishes mineral land (that is, land held

for its content of gypsum) from timber and other lands, and shows the mineral land according to form of tenure. Approximately 90 per cent of the gypsum land controlled in the United States was held by ownership, but in New York, on the contrary, the larger part of the operated land was held under lease.

TABLE 15.—LAND CONTROLLED, PRODUCING ENTERPRISES: 1919.

STATE.	Aggregate (acres).	MINERAL LAND (ACRES).			Timber and other lands (acres).
		Total.	Owued.	Held under lease.	
United States.....	42,193	41,703	36,581	5,122	490
New York.....	2,471	2,471	759	1,712	.....
Iowa.....	1,519	1,519	1,160	359	.....
Other eastern states.....	6,273	5,783	4,022	1,761	490
Western states.....	31,930	31,930	30,640	1,290	.....

In Table 16 the enterprises are classified according to form of tenure of mineral land—whether held by ownership, under lease, or partly held by ownership and partly under lease. The table also shows the per cent the total owned acreage is of the aggregate of mineral land, and also the per cent which the total under each class of tenure is of the aggregate acreage of mineral land. In New York and in Iowa, most of the land was held under mixed form of tenure, whereas in other states the control of mineral land was chiefly by ownership.

TABLE 16.—NUMBER OF PRODUCING ENTERPRISES AND ACRES OF MINERAL LAND CONTROLLED, CLASSIFIED ACCORDING TO FORM OF TENURE: 1919.

STATE.	TOTAL.					ENTERPRISES OPERATING ONLY OWNED LAND.			ENTERPRISES OPERATING ONLY LAND HELD UNDER LEASE.			ENTERPRISES OPERATING LAND PARTLY OWNED AND PARTLY HELD UNDER LEASE.				
	Number of enterprises.	Acres controlled—				Number of enterprises.	Acres controlled—		Number of enterprises.	Acres controlled—		Number of enterprises.	Acres controlled—			
		Aggregate.	By ownership.	By lease.	Per cent owned is of aggregate.		By ownership.	Per cent of aggregate.		By lease.	Per cent of aggregate.		Total.	Per cent of aggregate.	By ownership.	By lease.
United States.....	47	41,703	36,581	5,122	87.7	31	34,196	82.0	7	2,277	5.5	9	5,228	12.5	2,383	2,845
New York.....	6	2,471	759	1,712	30.7	2	135	5.5	1	422	17.1	3	1,914	77.5	624	1,290
Iowa.....	5	1,519	1,160	359	76.4	1	160	10.5	3	334	22.0	1	1,025	67.5	1,000	25
Other eastern states.....	8	5,783	4,022	1,761	69.5	5	3,822	66.1	2	1,361	23.5	1	600	10.4	200	400
Western states.....	28	31,930	30,640	1,290	96.0	23	30,081	94.2	1	160	0.5	4	1,689	5.3	559	1,130

Table 17 presents comparative statistics for 1919 and 1909, showing the acreage of mineral land and timber and other lands controlled. There was a slight increase in the number of acres of owned mineral land

operated, but large decrease in the other classes of land shown. These changes are in accord with the decrease in the number of mines operated, as shown in Table 4.

**TABLE 17.—COMPARATIVE STATISTICS, LAND CONTROLLED, PRODUCING ENTERPRISES: 1919 AND 1909.**

CHARACTER AND TENURE OF LAND.	ACRES.		
	1919	1909	Per cent of increase. <sup>1</sup>
Total land.....	42,193	54,215	-22.2
Mineral land.....	41,703	52,900	-21.2
Owned.....	35,551	35,552	2.8
Leased.....	6,122	17,308	-70.4
Timber and other lands.....	490	1,315	-62.7

<sup>1</sup> A minus sign (-) denotes decrease.

**Royalties.**—The census of mines and quarries, 1919, did not distinguish between royalties or rent paid for mineral land and rents of other kinds, but as these other rents are known to be insignificant in amount the statistics presented for royalties and rents may be taken to represent only royalties or rent of mineral land. Royalty, which is a compensation for the privilege of mining leased lands, is either a fixed share of the product or a percentage of the value of product.

Table 18 shows the enterprises classified according to form of land tenure, and gives the value of products and the royalties and rents paid. Thirty-one enterprises operated only owned land, produced approximately 60 per cent of the total value of products, and reported a negligible amount of rent; 7 enterprises operated leased lands only, reported products amounting to 17 per cent of the total and royalties amounting to 3 per cent of the value of their products; and 9 enterprises operated land partly owned and partly held under lease, but which, as shown in Table 16, was more than half leased land, and reported royalties amounting to 2.5 per cent of the value of their products.

**TABLE 18.—VALUE OF PRODUCTS AND ROYALTIES AND RENTS, FOR PRODUCING ENTERPRISES CLASSIFIED ACCORDING TO TENURE OF MINERAL LAND: 1919.**

CLASSES OF ENTERPRISES.	Number of enterprises.	Value of products.	Royalties and rents.
All classes.....	47	\$6,805,940	\$69,403
Enterprises operating:			
Only owned land.....	31	4,290,600	480
Only land held under lease.....	7	1,144,939	35,021
Land partly owned and partly held under lease.....	9	1,370,351	33,902

**POWER.**

**Power equipment used.**—The number and horsepower of the several types of prime movers and of electric motors used by the gypsum-mining enterprises in 1919 are presented for the United States as a whole and separately for states, in so far as they can be shown without disclosure, in the table of detailed statistics. Comparative statistics for 1919 and 1909 are presented for the United States in Table 19, which shows the number and horsepower

of power equipment used by producing enterprises and the per cent of increase or decrease in horsepower for each class of equipment used. A decrease is shown in the aggregate horsepower used which, as indicated in the section on progress of the industry, is largely due to a decrease in the number of operating enterprises because of depressed business conditions. In contrast to the general decrease, an increase of 200 per cent is shown in horsepower of electric motors operated by purchased power. In 1909, 85 per cent of the aggregate horsepower used was generated by prime movers and only 15 per cent furnished by electric motors operated by purchased current. On the other hand, in 1919, the horsepower of prime movers was only 46.8 per cent, while the horsepower of electric motors operated by purchased current constituted 53.2 per cent of the aggregate horsepower. An increase is also shown in the number of electric motors operated by current generated by the enterprises reporting them.

**TABLE 19.—COMPARATIVE STATISTICS, POWER USED, PRODUCING ENTERPRISES: 1919 AND 1909.**

	1919	1909	Per cent of increase. <sup>1</sup>
Power used: Aggregate horsepower.....	15,082	17,685	-15.0
Prime movers (total horsepower).....	7,088	15,025	-53.2
Steam engines—			
Number.....	47	90	.....
Horsepower.....	6,132	13,369	-54.2
Internal-combustion engines—			
Number.....	9	18	.....
Horsepower.....	572	681	-16.0
Water wheels and turbines—			
Number.....	3	10	.....
Horsepower.....	334	945	-64.7
Equipment operated by purchased power (total horsepower).....	7,994	2,660	200.5
Electric motors—			
Number.....	290	81	.....
Horsepower.....	7,994	2,660	200.5
Electric motors run by current generated by the enterprises reporting:			
Number.....	103	49	.....
Horsepower.....	1,447	1,333	8.6

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100.

**GENERAL TABLE.**

Table 20 presents in detail for 1919 the statistics of gypsum mines in the United States as a whole, in the two leading states, and in all other producing states grouped as "Other eastern states" and "Western states." The table gives the number of enterprises and mines, and the number of enterprises operating beneficiating plants; acreage of land controlled according to kind and the tenure of mineral land; the capital invested; the principal expenses of operation and development; the persons engaged in the industry, by classes and the wage earners according to occupation; and detailed statistics with regard to number and horsepower of power equipment, and with regard to fuel used. As all the gypsum-mining activities reported in 1919 were confined to productive operations, there are no statistics for nonproducing enterprises.

## MINES AND QUARRIES.

TABLE 20.—DETAILED STATISTICS FOR THE GYPSUM-MINING INDUSTRY, BY STATES: 1919.

	PRODUCING ENTERPRISES.				
	Total.	New York.	Iowa.	Other eastern states. <sup>1</sup>	Western states. <sup>2</sup>
Number of enterprises.....	47	6	5	8	28
Number of mines.....	48	6	5	8	29
Number of enterprises operating beneficiating plants.....	27	2	3	4	18
Mineral land operated..... acres.....	41,708	2,471	1,519	5,788	31,930
Land controlled..... acres.....	42,193	2,471	1,519	6,273	31,930
Mineral land owned..... acres.....	36,581	759	1,160	4,022	30,640
Mineral land held under lease..... acres.....	5,122	1,712	359	1,751	1,290
Timber and other lands..... acres.....	490			490	
Capital.....	\$13,541,548	\$1,559,514	\$2,124,006	\$4,816,157	\$5,041,871
Principal expenses.....	\$5,379,732	\$984,495	\$948,561	\$1,403,339	\$1,993,337
Salaries and wages—					
Officers, superintendents, managers, and technical employees.....	\$275,145	\$43,455	\$33,687	\$63,504	\$134,499
Clerks, etc.....	\$280,305	\$35,468	\$51,780	\$89,252	\$108,805
Wage earners.....	\$2,478,391	\$515,650	\$495,747	\$709,035	\$757,959
Supplies and materials.....	\$1,630,338	\$268,914	\$205,180	\$421,754	\$638,490
Fuel.....	\$516,148	\$36,719	\$119,879	\$139,690	\$220,150
Purchased power.....	\$144,272	\$47,767	\$13,021	\$32,126	\$51,358
Royalties and rents.....	\$60,403	\$31,946	\$21,021	\$14,032	\$2,404
Taxes—Federal, state, county, and local.....	\$81,983	\$9,576	\$7,546	\$23,976	\$40,885
Contract work.....	\$3,747				\$3,747
Expenditures for development (included in principal expenses).....	\$12,050		\$3,000	\$3,250	\$600
Value of products.....	\$6,805,940	\$1,110,463	\$1,092,920	\$1,857,638	\$3,744,924
Persons engaged in industry.....	2,477	446	457	694	880
Proprietors and officials (total).....	103	20	10	17	56
Proprietors and firm members (total).....	4	1			3
Number performing manual labor.....	3	1			2
Salaried officers.....	28	5	1	5	17
Superintendents and managers.....	66	10	9	12	35
Technical employees.....	5	4			1
Clerks, etc.—					
Male.....	135	19	25	42	49
Female.....	48	7	8	14	19
Wage earners (average number).....	2,191	400	444	621	726
Wage earners 15th day of—					
Maximum month.....	Nov. 2,715	Nov. 504	Oct. 619	Oct. 754	Dec. 875
Minimum month.....	Jan. 1,574	Aug. 340	Jan. 233	Jan. 484	Jan. 507
Wage earners by occupation, Dec. 15, or nearest representative day—					
Above ground (total).....	1,381	167	171	331	712
Below ground (total).....	1,175	304	355	353	168
Foremen, shift bosses, etc.—					
Above ground.....	37	2	2	10	23
Below ground.....	40	8	12	15	5
Engineers, hoistmen, electricians, mechanics, etc.—					
Above ground.....	105	11	17	37	40
Below ground.....	40	18	1	18	3
Miners, quarrymen, and drillmen, including their helpers—					
Above ground.....	169			2	157
Below ground.....	445	97	109	124	115
Timbermen, trackmen, and men engaged in hauling, tramming, etc.—					
Above ground.....	25	1	5	2	17
Below ground.....	208	48	86	58	16
Muckers, loaders, laborers, and others not classified—					
Above ground.....	239	50	21	41	127
Below ground.....	442	133	147	138	24
Wage earners employed in mills and beneficiating plants—					
Above ground.....	816	103	126	239	348
Number of females included in wage earners reported above—					
Above ground.....	11			9	2
Power used: Aggregate horsepower.....	15,032	1,706	2,057	5,179	6,090
Prime movers (horsepower, total).....	7,038	725	1,256	2,190	2,967
Steam engines—					
Number.....	47	3	4	13	27
Horsepower.....	6,132	707	1,256	2,065	2,104
Internal-combustion engines—					
Number.....	9	1		1	7
Horsepower.....	572	18		125	429
Water wheels and turbines—					
Number.....	3				3
Horsepower.....	334				334
Equipment operated by purchased power (horsepower, total).....	7,994	961	801	2,989	3,223
Electric motors—					
Number.....	290	25	40	116	109
Horsepower.....	7,994	961	801	2,989	3,223
Electric motors run by current generated by the enterprise reporting:					
Number.....	103	41	21	21	20
Horsepower.....	1,447	392	551	318	186
Fuel used:					
Coal, bituminous..... tons, 2,000 pounds.....	76,086	10,835	18,360	29,734	17,157
Coke..... tons, 2,000 pounds.....	1,534	428	465	641	
Wood..... cords.....	43				43
Fuel oils..... barrels.....	62,983				62,983
Gasoline and other volatile oils..... barrels.....	1,752	3		93	1,656

<sup>1</sup> Includes enterprises in states as follows: Michigan, 4; Ohio, 2; Virginia, 2.<sup>2</sup> Includes enterprises in states as follows: Arizona, 1; California, 1; Colorado, 2; Kansas, 3; Nevada, 3; New Mexico, 1; Oklahoma, 5; Oregon, 1; South Dakota, 2; Texas, 3; Utah, 2; Wyoming, 4.

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# APPENDIXES

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APPENDIX A.—SCHEDULES

APPENDIX B.—INSTRUCTIONS TO SPECIAL AGENTS







GENERAL SCHEDULE.

**CONFIDENTIAL**

Form 200  
**DEPARTMENT OF COMMERCE**  
**BUREAU OF THE CENSUS**  
SAM. L. ROGERS, Director

**CENSUS OF MINES AND QUARRIES, 1919**

EUGENE F. HARTLEY  
CHIEF STATISTICIAN FOR MANUFACTURES

## GENERAL SCHEDULE

1. Description of mine, quarry, or mineral production mill: If the information given on this schedule embraces more than one mine, quarry, or mill, give the name and location of each under "Branches" on the last page. Separate reports, however, must be made for mines, quarries, mills, etc., in different States or counties.

NAME OF MINE, QUARRY, OR MILL \_\_\_\_\_

NAME OF OWNER OR OPERATOR \_\_\_\_\_

LOCATION OF MINE, QUARRY, OR MILL: State \_\_\_\_\_ County \_\_\_\_\_  
City or town \_\_\_\_\_ Post office \_\_\_\_\_

Is mine, quarry, or mill located within the corporate limits of the city or town? (Yes or No) \_\_\_\_\_

Post-office address of general office \_\_\_\_\_

CHARACTER OF ORGANIZATION \_\_\_\_\_  
The report should relate to the last day of the period covered by the report and should be one of the following: Individual, partnership, incorporated company, cooperative association, or other.

NUMBER OF PERSONS ON PAYROLL: If an individual or partnership (Male) \_\_\_\_\_ (Female) \_\_\_\_\_  
If partnership, include both active and silent partners.

Is description of plant contained in connection with mine or quarry by name, address, or incorporation organization? (Yes or No) \_\_\_\_\_  
If incorporation, give name \_\_\_\_\_

Specify whether breaker, washery, grinding or dressing plant, concentrating mill, briquetting plant, smelter, or millinery, etc.

Principal ores, minerals, or stone products \_\_\_\_\_  
(Specify in general order of importance.)

WASHINGTON, D. C., December 31, 1919.

The Census of Mines and Quarries is taken in conformity with the requirements of the act of Congress approved March 3, 1919. Reports are required on this schedule for all mines and quarries that were in operation for development or production purposes during any portion of the year ending December 31, 1919, but the statistics may pertain to the business year which most nearly coincides to the calendar year. The law makes it obligatory upon the owner or operator of any mine or quarry to furnish correct data.

To avoid duplicate inquiries, the Geological Survey and the Bureau of Mines, which collect annual statistics relating to the mineral industry, and the Bureau of the Census are cooperating. In addition to the report on this blank, a report must be made on the special supplemental schedule or schedules herewith.

All answers will be held absolutely confidential. No publication will be made in the Census reports disclosing the names or operations of individual establishments in any particular. The act of Congress provides that the Bureau of the Census shall not permit anyone other than the more employees of the Bureau to examine the individual reports. It also provides that any employee who shall, without the authority of the Director of the Census, publish or communicate any information coming into his possession, shall be guilty of a felony, and upon conviction be fined not to exceed \$1,000, or be imprisoned not to exceed two years, or both, in the discretion of the Court.

Amounts and values are to be obtained from book accounts, if such accounts are available. Each question should be answered. If any question is found not applicable and no amount is reported, write the word "None." Do not duplicate any item of expense.

*Sam. L. Rogers*  
Director of the Census.

2. Capital actually invested, and area of mineral and other lands:  
AMOUNT OF CAPITAL, BOTH OWNED AND BORROWED, INVESTED BY THE OPERATOR \_\_\_\_\_  
The owner should give the total amount of capital owned and borrowed, invested by the operator, in the production on the last day of the business year covered. It is not intended to include land held for speculation in other countries.

MINERAL AND OTHER LANDS: Number of acres, patented and unpatented, owned or leased by operator. Include only lands actually pertaining to the mining property covered by this report; not undivided lands leased elsewhere.

	OWNED BY OPERATOR	MINERAL LANDS OR OTHER LANDS	LEASED TO OPERATOR
Mineral and other lands (name) _____			
Timber land not included above (acres) _____			
Other land (acres) _____			
Total (acres) _____			

3. Selected employees: Number, December 15, 1919, as per pay roll. If data are not obtainable for that day or month, give the data for nearest representative or normal day, and state day and month here: \_\_\_\_\_

EMPLOYED OTHERWISE BY OPERATOR \_\_\_\_\_  
SUPERINTENDENTS, MANAGERS, AND ASSISTANTS \_\_\_\_\_  
TECHNICAL EMPLOYERS: ENGINEERS, GEOLOGISTS, ETC. \_\_\_\_\_  
CLERKS, STENOGRAPHERS, ETC. \_\_\_\_\_  
TOTAL \_\_\_\_\_

4. Wage carriers, including employees paid by ton, car, yard, or other unit: Number, December 15, 1919, as per pay roll. If data are not obtainable for that day or month, give data for nearest day as for January 1. In case of mines include all persons working in connection with mine, quarry, or mill, whether employed directly by owner or lessee, contractor, or other. Include only wage carriers at mines and mills. Exclude persons working at other plants, even when they have done some mining work as stony operators, however, classed as reported under item 1, report 5.

	EMPLOYED DIRECTLY BY OPERATOR		EMPLOYED OTHERWISE, AS BY CONTRACTOR, ETC.	
	Above ground	Below ground	Above ground	Below ground
Person, shift bonus, etc. _____				
Engineers, motor-men, hoisting men, dressers, mechanics, electricians, carpenters, and other mechanics _____				
Mines, cutters, quarrymen, and drillmen, including their helpers, timbermen, (mechanics, and all men engaged in hauling, trimming, and capping) _____				
Mechanics, loaders, laborers, and others not classified _____				
Wage carriers employed in railroad haulage, including plant, in dressing, grinding, concentrating, etc. _____				
ALL WAGE CARRIERS _____				
ALL UNDER 16 YEARS (INCLUDED IN FIGURE REPORTED ABOVE) _____				
TOTAL EMPLOYED DIRECTLY AND OTHERWISE _____				

Number of females, if any, employed in or about mine or quarry, and included above \_\_\_\_\_

NUMBER OF PERSONS ON PAY ROLL: EMPLOYERS SHOULD SHOW MARITAL STATUS BY OR ABOUT THE YEAR, QUARTER, OR WEEK \_\_\_\_\_

5. Wage carriers, including employees paid by ton, car, yard, or other unit: Number, as per pay roll or time records on fifteenth day of each month of the period covered by this report. If data are not obtainable for that day, give data for nearest representative day.

EMPLOYED DIRECTLY BY OPERATOR			EMPLOYED OTHERWISE, AS BY CONTRACTOR, ETC.		
Month	Number	Month	Month	Number	Month
Jan	_____	Sept	_____	Jan	_____
Feb	_____	Oct	_____	Feb	_____
Mar	_____	Nov	_____	Mar	_____
Apr	_____	Dec	_____	Apr	_____
May	_____			May	_____
June	_____			June	_____
July	_____			July	_____
Aug	_____			Aug	_____

6. Salary and wage payments: Total amounts paid in salaries and wages during the year covered by this report. Report separately the amount paid for contract work not done by regular employees. See note to inquiry 1 as to basis.

SALARIES OF SUPERVISORS \_\_\_\_\_ \$ \_\_\_\_\_  
SUPERINTENDENTS, MANAGERS, AND ASSISTANTS \_\_\_\_\_ \$ \_\_\_\_\_  
TECHNICAL EMPLOYERS: ENGINEERS, GEOLOGISTS, ETC. \_\_\_\_\_ \$ \_\_\_\_\_  
CLERKS, STENOGRAPHERS, ETC. \_\_\_\_\_ \$ \_\_\_\_\_  
WAGE CARRIERS \_\_\_\_\_ \$ \_\_\_\_\_  
TOTAL \_\_\_\_\_ \$ \_\_\_\_\_

Amount paid for contract work \_\_\_\_\_ \$ \_\_\_\_\_  
Include amount paid for contract work, but not labor, etc., during the year, if not done by employees hired directly by the operator.

7. Time in operation and hours worked:  
NUMBER OF DAYS IN OPERATION DURING THE YEAR \_\_\_\_\_  
Give the number of days the mine was in operation during the year. Days when shut down for repairs or for other causes, and days when another establishment owned and controlled, should not be included. Do not include days when the mine was in actual operation.

NUMBER OF HOURS NORMALLY WORKED BY WAGE CARRIERS (a) PER SHIFT \_\_\_\_\_ (b) PER WEEK \_\_\_\_\_  
Give the working hours worked during the year, without operation in relation to hours from this position. All that is needed to know is the precise quantity of work in relation to the mine or quarry.

8. Miscellaneous expenses: Amount actually incurred during the year, whether or not paid, for the following items.

RENT AND REPAIRS \_\_\_\_\_ \$ \_\_\_\_\_  
Include amount paid for rent of tools and plant, royalty on product, water privileges, etc. Where a share of the product is paid as royalty, estimate its value on the basis of the average price received by the operator for his own share of the product.

TAXES \_\_\_\_\_ \$ \_\_\_\_\_  
(Federal) \_\_\_\_\_  
(State, county, and local) \_\_\_\_\_

DEVELOPMENT WORK \_\_\_\_\_ \$ \_\_\_\_\_  
Give total cost of all development work during the year, whether done directly by regular employees or by contract, which cost should be included in answers to inquiry 6 and 8.

9. Materials, supplies, fuel, and power: Total cost of all used during the year covered by this report. The inquiry relates to all materials and supplies of every description and fuel and power used during the year covered by the report for the purpose in connection with the development or operation of the mine. Fuel and power materials is kept in a separate account, under the heading "Fuel and power" in the report. Fuel and power materials is kept in the form of coal, oil, kerosene, gas, and other fuels, and is used in the form of steam, electricity, or other power. It includes all other materials, supplies, and other goods used in the mine, and includes all other expenses, such as hauling, carting, and other expenses, and includes all other expenses, such as hauling, carting, and other expenses, and includes all other expenses, such as hauling, carting, and other expenses.

TOTAL COST OF ALL MATERIALS (OTHER THAN FUEL) AND SUPPLIES USED DURING THE YEAR \_\_\_\_\_ \$ \_\_\_\_\_

COST OF FUEL \_\_\_\_\_ \$ \_\_\_\_\_

COST OF POWER PURCHASED \_\_\_\_\_ \$ \_\_\_\_\_

AMOUNT PAID, IF ANY, FOR FUEL OR ABOVE WHICH HAS NOT ALREADY BEEN INCLUDED \_\_\_\_\_ \$ \_\_\_\_\_

TOTAL COST OF MATERIALS, SUPPLIES, FUEL, FUELDER OF GASES, AND POWER \_\_\_\_\_ \$ \_\_\_\_\_

10. Products: Value of products and work performed during the year. Give the selling value L. S. B. at point of shipment, or such other value as may represent the net value or amount received for the oil or gas under the terms by which it was disposed of, and include of market value oil or gas produced and used by operating company.

Oil or gas, etc. (name) \_\_\_\_\_ \$ \_\_\_\_\_

OTHER PRODUCTS (SPECIFY) \_\_\_\_\_ \$ \_\_\_\_\_  
AMOUNT RECEIVED FOR WORK, IF ANY, PERFORMED FOR OTHER ESTABLISHMENTS, SUCH AS DRILLING, FURNISHING, MINING, ETC. \_\_\_\_\_ \$ \_\_\_\_\_

TOTAL VALUE OF ALL PRODUCTS \_\_\_\_\_ \$ \_\_\_\_\_

11. Power employed about mine: Give the type of prime mover used, including the number and horsepower of all engines, motors, etc., used for drilling, pumping, or other purposes.

CLASS	NUMBER	HORSEPOWER
4. TURBINE MACHINES OWNED OR RENTED		
Steam engines _____		
Internal-combustion engines _____		
Other prime movers (specify kind) _____		
TOTAL PRIME MOVERS _____		
Electric generators: Number _____ Rating in K. W. _____		
Electric motors (run by current generated by establishment reporting) _____		
5. POWER PURCHASED FROM OTHER ESTABLISHMENTS— Electric motors (include motors owned by the establishment but operated by purchased power) _____		
Other power (specify kind) _____		

12. Pumps (Give kind and quantity of each.)

	OWNED BY OPERATOR	QUANTITY
_____		
_____		

13. Remarks: \_\_\_\_\_

**CERTIFICATE.**

This is to certify that the information contained in this schedule and in the supplemental schedule is complete and correct to the best of my knowledge and belief, and covers the period from \_\_\_\_\_, 19\_\_\_\_, to \_\_\_\_\_, 19\_\_\_\_.

(Signature of Special Agent.) (Signature of official designation of person furnishing the information.)

(Date.)

SPECIAL GENERAL SCHEDULE (PETROLEUM AND NATURAL GAS).

Form 900  
**DEPARTMENT OF COMMERCE**  
**BUREAU OF THE CENSUS**  
**CENSUS OF PETROLEUM AND NATURAL GAS, 1919**  
**GENERAL SCHEDULE**

1. Description of wells: If the information given on this schedule embraces more than one group of wells, give the name and location of each on supplemental schedule. Separate reports, however, must be made for wells or groups of wells in different States or counties.

NAME OF WELL, GROUP OF WELLS, OR LEASE  
NAME OF OPERATOR  
If OPERATOR IS NOT OWNER OF WELLS, GIVE NAME AND ADDRESS BY OWNER

This question does not call for the owner of the land in case of land leased for oil or gas purposes, but only for the owner of the wells.

NUMBER OF WELLS COVERED BY THIS REPORT

State \_\_\_\_\_ County \_\_\_\_\_  
LOCATION OF WELLS City or town \_\_\_\_\_ Post office \_\_\_\_\_  
Township \_\_\_\_\_ Range \_\_\_\_\_ Section \_\_\_\_\_

POST-OFFICE ADDRESS OF GENERAL OFFICE \_\_\_\_\_

CHARACTER OF ORGANIZATION \_\_\_\_\_  
The answer should relate to the last day of the period covered by the report and should be one of the following: Individual, partnership, incorporated company, cooperative association, or other.

NUMBER OF PERSONS WHOSE PAYMENTS ARE REPORTED IN A MONTHLY OR QUARTERLY STATEMENT \_\_\_\_\_  
Give number of members on last day of period covered by this report. If partnerships, if cooperative societies, give both active and silent partners. If cooperative society, give number of members of society.

CHARACTER OF PRODUCTS \_\_\_\_\_  
Specify in the order of importance: petroleum, natural gas, casing head product, etc.

Washington, D. C., December 31, 1919.

The Census of Petroleum and Natural Gas is taken in conformity with the requirements of the act of Congress approved March 3, 1919. Reports are required on this schedule for all wells that were in operation for development or production purposes any part of the year ending December 31, 1919, but the statistics may pertain to the business year which most nearly coincides to the calendar year. The law makes it obligatory upon the owner or operator of any well to furnish accurate data.

To avoid duplicate inquiries, the Geological Survey and the Bureau of Mines, which collect general statistics of production, and the Bureau of the Census are cooperating. In addition to the report on this blank, a report must be made on the special supplemental schedule or schedules herewith.

All answers will be held absolutely confidential. No publication will be made in the census reports disclosing the names or operations of individual establishments in any particular, and the information will be used only for the statistical purposes for which it is supplied. The act of Congress provides that the Bureau of the Census shall not permit any other than the own employees of the Bureau to examine the individual reports. It also provides that any employee who shall, without the authority of the Director of the Census, publish or communicate any information concerning this report, shall be guilty of a felony, and upon conviction be fined not to exceed \$1,000, or be imprisoned not to exceed two years, or both, in the discretion of the court.

Amounts and values are to be obtained from bank accounts, if such accounts are available. Each question should be answered. If any question is found not applicable and no amounts are reported, write the word "None." Do not duplicate any item of expense.

*Sam. G. Rogers*  
Director of the Census.

2. Capital actually invested:  
AMOUNT OF CAPITAL, BOTH OWNED AND BORROWED, INVESTED BY OPERATOR \_\_\_\_\_  
The answer should show the total amount of capital owned and borrowed, invested by the operator, in the operation on the last day of the business year reported, as shown on the balance sheet. Do not include securities and bonds representing investments in other enterprises.

3. Related employees: Number, December 31, 1919, as per pay roll. If data are not obtainable for that day or month, give the data for nearest representative or normal day, and state day and month here \_\_\_\_\_

NAME \_\_\_\_\_ Title \_\_\_\_\_ Rank \_\_\_\_\_

SALARIED OFFICERS OF CORPORATION \_\_\_\_\_  
SUPERINTENDENTS, MANAGERS, AND ASSISTANTS \_\_\_\_\_  
TECHNICAL EMPLOYERS: ENGINEERS, GEOLOGISTS, ETC. \_\_\_\_\_  
CLERKS, STENOGRAPHERS, ETC. \_\_\_\_\_

TOTAL \_\_\_\_\_

4. Wage-earners: Number, December 31, 1919, as per pay roll. If data are not obtainable for that day or month, give data for same day as for Inquiry 3. Answer should include all persons working in connection with wells, whether employed directly by owner or working for lease, contractor, or other. Include as wage earners all persons performing work similar to men over whom they have charge; those whose duties are strictly supervisory should be reported under second item of Inquiry 3.

EMPLOYED DIRECTLY BY OPERATOR: \_\_\_\_\_  
ENGINEERS, FURNACERS, MILLERS, PUMPS, MACHINISTS, CARPENTERS, AND OTHER MECHANICS \_\_\_\_\_  
ALL OTHER EMPLOYERS \_\_\_\_\_

TOTAL EMPLOYED DIRECTLY BY OPERATOR \_\_\_\_\_

UNDER 16 YEARS (INCLUDED IN ITEMS REPORTED ABOVE): Number \_\_\_\_\_

EMPLOYED OTHERWISE, AS BY CONTRACTOR, ETC. \_\_\_\_\_  
TOTAL EMPLOYED DIRECTLY AND OTHERWISE \_\_\_\_\_

NUMBER OF FEMALES, IF ANY, EMPLOYED ABOUT THE WELLS, AND EMPLOYED ABOVE \_\_\_\_\_

NUMBER OF PROFESSIONALS OR FREE BENEVOLENTS REGULARLY DOING MANUAL LABOR ABOUT THE WELLS \_\_\_\_\_

5. Wage earners: Number, as per pay rolls or time records on fifteenth day of each month of the period covered by this report. If data are not obtainable for that day, give data for nearest representative day.

EMPLOYED DIRECTLY BY OPERATOR			EMPLOYED OTHERWISE, AS BY CONTRACTOR, ETC.		
Month	Number	Month	Number	Month	Number
Jan.	_____	May	_____	Sept.	_____
Feb.	_____	June	_____	Oct.	_____
Mar.	_____	July	_____	Nov.	_____
Apr.	_____	Aug.	_____	Dec.	_____

6. Salary and wage payments: Total amounts paid in salaries and wages during the year covered by this report. Wages should be not wages, after deducting changes for supplies furnished by the company to miners or employees and other matters, such as expenses, camp oil, blacksmithing, etc., as well as charges for power, lighting, transportation, etc. Report separately the amount paid for contract work, not done by regular employees. See note to Inquiry 4 as to bonuses.

SALARIED OFFICERS OF CORPORATION \_\_\_\_\_  
SUPERINTENDENTS, MANAGERS, AND ASSISTANTS \_\_\_\_\_  
TECHNICAL EMPLOYERS: ENGINEERS, GEOLOGISTS, ETC. \_\_\_\_\_  
CLERKS, STENOGRAPHERS, ETC. \_\_\_\_\_

WAGE EARNERS, PAID BY WEST OF THE ROCKY MOUNTAINS, OR THERE \_\_\_\_\_  
Include wages for all persons employed by the operator, whether or not they are reported in Inquiry 5.

MINERS AND OTHERS EMPLOYED BY OTHER OPERATORS \_\_\_\_\_  
This should include both contract and lease mining, petroleum, and all other pertaining work for the operator, but exclude those who have been detailed.

TOTAL \_\_\_\_\_

Amount paid for contract work \_\_\_\_\_  
Include tunneling, shaft sinking, boring test holes, etc., during the year, if not done by employees hired directly by the operator.

7. Time in operation and hours worked:  
NUMBER OF DAYS IN OPERATION DURING THE YEAR \_\_\_\_\_  
Give the number of days the mine, quarry, or mill, or any part of it, was in operation during the year. Does not include days when the mine, quarry, or mill, or any part of it, was closed for repairs, or when the mine, quarry, or mill, or any part of it, was closed for other reasons, such as fire, flood, or other causes, or when the mine, quarry, or mill, or any part of it, was closed for other reasons, such as fire, flood, or other causes, or when the mine, quarry, or mill, or any part of it, was closed for other reasons, such as fire, flood, or other causes.

NUMBER OF HOURS NORMALLY WORKED BY WAGE EARNERS (a) PER SHIFT \_\_\_\_\_ (b) PER WEEK \_\_\_\_\_  
Give the number of hours normally worked by wage earners during the year, without regard to holidays or vacation, as that is not desired to know, the precise figures prevailing in respect to the latter of these employees.

8. Miscellaneous expenses: Amount actually incurred during the year, whether or not paid, for the following items:

RENT AND ROYALTIES \_\_\_\_\_  
Rent for property used for oil or gas, or for other purposes, such as for lease, water, transportation, and other purposes, such as for lease, water, transportation, and other purposes.

TAXES \_\_\_\_\_  
FEDERAL \_\_\_\_\_  
STATE, COUNTY, AND LOCAL \_\_\_\_\_

TOTAL \_\_\_\_\_

DEVELOPMENT WORK \_\_\_\_\_  
Give total cost of all development work during the year, whether done directly by regular employees or by contract, which cost should be included in answer to Inquiry 6 and 7.

9. Materials, supplies, fuel, and power: Total cost of all used during the year covered by this report. This inquiry relates to all materials and supplies of every description and fuel and power used during the year covered by the report for any purpose in connection with the development or operation of the mine or quarry. If bought or paid for outside the mine, it is a separate account, enter in the proper line below; otherwise include the cost in answer to the first two items. Include in the first item the cost of the following materials: Lumber and timber used for posts, mine supports, track ties, and all other purposes; iron and steel for blacksmithing, mill, hoists, etc.; for tracks and repairs; renewals and repairs of tools; explosives and all used directly or sold to employees; water for boilers and other purposes; machinery supplies, etc.

TOTAL COST OF ALL MATERIALS (OTHER THAN FUEL) AND SUPPLIES USED DURING THE YEAR \_\_\_\_\_

COST OF FUEL FOR HEAT, POWER, AND VEHICLES \_\_\_\_\_  
COST OF POWER PURCHASED (ELECTRIC, WATER, COMPRESSED AIR, ETC.) \_\_\_\_\_

AMOUNT PAID, IF ANY, FOR FREIGHT ON ABOVE WHICH HAS NOT ALREADY BEEN INCLUDED \_\_\_\_\_

TOTAL COST OF ALL MATERIALS, SUPPLIES, FUEL, FREIGHT ON SAME, AND POWER \_\_\_\_\_

10. Products: Value of products and work performed during the year. Give the selling value, f. o. b. at point of shipment, or such other value as may represent the net value or amount received for the ore or mineral under the terms by which it was disposed of, and include, also, the value of the mine or quarry of products used by the operating company. Value \_\_\_\_\_

ORE, MINERAL, OR OTHER (NAME) \_\_\_\_\_  
\_\_\_\_\_

OTHER PRODUCTS (NAME) \_\_\_\_\_  
(Include number of pieces produced and sold.)

AMOUNT RECEIVED FOR WORK, IF ANY, PERFORMED FOR OTHER ESTABLISHMENTS, SUCH AS RAILROADS, HOISTERS, PUMPS, HOOP WORK, REPAIRS, COOPER SHEDS, AND OTHERS \_\_\_\_\_

TOTAL VALUE OF ALL PRODUCTS \_\_\_\_\_

11. Power employed in or about the mine, quarry, or mill: Give the type of prime mover used, including the number and horsepower of all engines, motors, water wheels, etc., used for lifting, ventilating, pumping, hoisting, mill drive, or other purpose.

CLASS	NUMBER	TOTAL HORSEPOWER
Steam engines (not turbines)	_____	_____
Steam turbines	_____	_____
Internal-combustion engines (oil, gas, gasoline, etc.)	_____	_____
Water wheels and turbines (irrespective of ownership of the water supply)	_____	_____
Water motors (operated by water from city mains)	_____	_____
TOTAL POWER ENGINES	_____	_____
Electric generators: Number _____ Rating in H. P. _____ Electric motors (run by current generated by establishment reporting)	_____	_____
Electric motors (include all motors which are operated by purchased power)	_____	_____
Other power (specify kind) _____	_____	_____

\* If reported in brackets, with "E. W." after amount.

12. Fuel used: Give the quantity of each kind of fuel used during the year. Include fuel used for power, heat, and lighting.

	UNIT OF MEASURE	QUANTITY
Anthracite	Ton (2,000 lbs.)	_____
Coal (bituminous)	Ton (2,000 lbs.)	_____
Lignite	Ton (2,000 lbs.)	_____
Oil	Ton (2,000 lbs.)	_____
Wood	Cord	_____
Peat or silt	Barrel	_____
Kerosene and gasoline and other volatile oils	Barrel	_____
Gas (specify whether natural or manufactured; do not report if used solely for lighting)	1,000 cu. ft.	_____

13. Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CERTIFICATE.**  
THIS IS TO CERTIFY that the information contained in this schedule and in the supplemental schedule is complete and correct to the best of my knowledge and belief, and covers the period from \_\_\_\_\_, 19\_\_\_\_, to \_\_\_\_\_, 19\_\_\_\_.

(Signature of Special Agent.) \_\_\_\_\_ (Signature and official designation of person furnishing the information.) \_\_\_\_\_

(A-900)

SUPPLEMENTAL SCHEDULE (BITUMINOUS COAL).

Form 200  
 DEPARTMENT OF COMMERCE  
 BUREAU OF THE CENSUS  
 DEPARTMENT OF THE INTERIOR  
 UNITED STATES GEOLOGICAL SURVEY

**BITUMINOUS COAL, 1919**  
 SUPPLEMENTAL SCHEDULE

INDEX No. \_\_\_\_\_

NAME OF MINE \_\_\_\_\_

LOCATION OF MINE (State \_\_\_\_\_ County in which mine opening is located \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_ Section \_\_\_\_\_)

RAILROAD STATION OR POST OFFICE NEAREST TO MINE \_\_\_\_\_

NAME OR NUMBER OF COLLIERY FROM WHICH PRODUCT IS MINED \_\_\_\_\_

NAME OF OPERATOR \_\_\_\_\_

ADDRESS OF OPERATOR \_\_\_\_\_

HAS MINE CHANGED NAMES DURING THE YEAR? \_\_\_\_\_ If so, DATE OF CHANGE \_\_\_\_\_

NAME AND ADDRESS OF PERSON TO WHOM SOLD OR LEASED (Name \_\_\_\_\_ Address \_\_\_\_\_)

If any production prior to change, fill out this schedule.  
 A report must also be made on the General Census Schedule for Mines and Quarries. Both reports should cover the same period.

WASHINGTON, D. C., December 31, 1919

To avoid duplicate inquiries, the Geological Survey, which collects annual statistics of production of minerals, and the Bureau of the Census are cooperating with respect to securing data for the year 1919. This schedule has been prepared by the United States Geological Survey and calls for information desired by the Survey, but such information will also be used by the Bureau of the Census in connection with the census statistics of 1919. All answers will be held absolutely confidential. The Geological Survey will not publish them in such a way as to permit the identification of the operations of individual establishments. The Census Bureau will also treat any information thus secured as subject to the provisions of law regarding confidential treatment contained in the act of Congress of March 3, 1919, for taking the fourteenth and subsequent decennial censuses, as more fully set forth in the general census schedule of mines and quarries.

*John G. Briggs* Director of the Census  
*Lee Van Hook* Director U. S. Geological Survey

1. Character of coal produced: (Describe as one of the following)—Bituminous, subbituminous, semianthracite, splint, block, cannel, sublimation, or lignite \_\_\_\_\_

2. Production: Quantity and value of coal mined in 1919. Include all marketable coal. Exclude only refuse from washeries and slack coal created. Values reported should be total dollars realized for product (i. e., less mine less selling expenses. Value of coal not sold but used by producer, also mine fuel and coal coked, should be estimated at average prices that might have been realized. The total value of products to appear in General Schedule.

Disposition of product.	Quantity in tons (The net tonnage)	Value in \$.
(a) Loaded at mine for shipment.		\$ _____
(b) Sold to local trade, used by employees, or taken by engine at mine.		\$ _____
(c) Used at mine for steam and heat.		\$ _____
(d) Made into coke at mine (Report details on supplemental schedule for coke).		\$ _____
<b>TOTAL PRODUCTION</b>		\$ _____

3. Time in operation:  
 (a) Check all months in which some of the reported output was obtained:  
 Jan., Feb., Mar., Apr., May, June, July, Aug., Sept., Oct., Nov., Dec.  
 (b) Total number of full days mine (apply) was in operation during the year (parts of days should be reduced to equivalent in full days). \_\_\_\_\_  
 (c) Number of hours per working day \_\_\_\_\_

4. Number of employees:  
 Average number of men employed during the year, excluding coke washers and office force:  
 Underground \_\_\_\_\_  
 Surface \_\_\_\_\_

5. Strikes:  
 Were there any strikes in 1919 at the mine? If so, state number of men affected and duration in days, excluding Sundays and holidays:  
 Number of men on strike \_\_\_\_\_  
 Average number of days on strike \_\_\_\_\_

6. Character of openings to the works:  
 Shaft \_\_\_\_\_  
 Slope \_\_\_\_\_  
 Drift or level \_\_\_\_\_  
 Open cutting or stopping \_\_\_\_\_  
 Other method (specify) \_\_\_\_\_

7. Mining methods, 1919:  
 (a) How much was undercut by hand? \_\_\_\_\_ Tons  
 (b) How much was shot from the cold? \_\_\_\_\_ " "  
 (c) How much was mined by machines? \_\_\_\_\_ " "  
 (d) How much was mined from steam-shovel pits? \_\_\_\_\_ " "  
 (If exact figures are not available, state approximate percentages.)

8. Kinds of machines:  
 For underground:  
 Pick or puncher machines \_\_\_\_\_  
 Chain-burst machines \_\_\_\_\_  
 Longwall machines \_\_\_\_\_  
 Other types (specify) \_\_\_\_\_  
 For shoring:  
 Pick machines \_\_\_\_\_  
 Chain machines \_\_\_\_\_  
 Other types (specify) \_\_\_\_\_  
 TOTAL NUMBER OF MINING MACHINES OF ALL TYPES USED IN 1919 \_\_\_\_\_

9. Total number of steam shovels used in 1919 \_\_\_\_\_

10. Coal washed or otherwise cleaned for market in 1919:  
 (a) How much was washed? \_\_\_\_\_ Tons  
 (b) How much washed coal was obtained? \_\_\_\_\_ " "  
 (c) Quantity of refuse \_\_\_\_\_ " "  
 (This refuse should not be included in statement of coal produced as given in reply to inquiry 1.)

11. Railroads or waterways over which product was first loaded for shipment:  
 NAME OF RAILROAD OR WATERWAY \_\_\_\_\_ Tons \_\_\_\_\_

12. Remarks \_\_\_\_\_

## APPENDIX B.—INSTRUCTIONS TO SPECIAL AGENTS.

**Instructions for census of manufactures apply.**—All of the instructions in regard to methods and practices to be followed by the field force in collecting statistics of manufactures (see Census of Manufactures, Vol. VIII) apply equally to the collection of statistics of mines, quarries, mineral reduction mills, and petroleum and natural gas wells, except as noted in the instructions which follow. These instructions are additional and for the purpose of covering certain special features of the schedules for the mining and quarrying industries.

**Unit of enumeration.**—The mine, mineral reduction mill, quarry, well, or group of mines, quarries, or wells, all in the same district or territory and owned or operated by one and the same operator, is the unit of enumeration, corresponding with the establishment for manufactures, and the following instructions concerning separate reports for establishments must be followed.

**Separate sets of books.**—When the owner operates two or more mines, quarries, or wells in the same district or territory, and maintains separate sets of books for each, they should be treated as separate establishments; but if one set of books only is kept, they may be treated as one establishment.

**Separation of industries.**—It is necessary to publish separately the statistics for the different mining industries as defined by the Census Bureau. Therefore, when two or more distinct industries, such as those indicated by the *supplemental schedules*, are carried on under the same ownership with only a single set of books, and it is practicable to secure for each industry complete separate reports in the General Schedule, they should be secured, each being accompanied by its proper supplemental schedule. If this is impracticable, one report should be made on the General Schedule for the entire establishment and separate reports on the supplemental schedules for the different mining industries. In all cases the total value of products on the supplemental schedules must equal the total on the General Schedule to which they relate. In some instances a mining property may also produce minor products for which supplemental schedules are required. For example, a coal-mining property may also produce a small quantity of clay or an oil property may produce as the major product, petroleum and as the minor product, natural gas. In such cases one general schedule covering the whole mining operation should be prepared accompanied by the appropriate supplementals.

**Separation of localities.**—It is necessary to secure separate statistics for the different states, therefore, when the same owner operates two or more mines, quarries, or wells in different states, separate reports covering the plant or plants in each state, must be prepared, *though only one set of books is kept for all the plants*. If estimates are necessary to make the complete reports for the separate plants, they must be carefully prepared in consultation with the person who furnishes the information and marked "Estimate."

**Mines, mills, quarries, and wells to be reported.**—All classes of mines, quarries, and petroleum and gas wells that were in operation during any portion of the year (including those operated by penal, eleemosynary, and educational institutions) except as noted below, must be reported.

**Operations to be omitted from census:**

- a. Mines, mills, quarries, or wells that were idle during the entire year.
- b. Small bituminous coal banks producing less than 1,000 tons annually.
- c. Itinerant individual placer gold miners and miners hunting for precious stones who employ no help.
- d. Prospectors.
- e. The digging or dredging of sand and gravel for the construction of roads and for building operations or other purposes.
- f. Natural mineral waters.
- g. The digging and preparation of peat.
- h. The digging and preparation of marls, both calcareous, and greensand.
- i. Mining of minor and rare minerals such as strontium ores, monazite, zircon, etc., unless conducted as part of an established industry producing other mineral products.

**Development work to be reported.**—Mines at which development work was carried on during the year must be reported whether or not there was production. However, if a mining property reports

no production but development work *only*, a report is not to be secured unless the development work amounts to \$5,000.

**Mining and manufacturing.**—There are several branches of mining and quarrying in which the mineral products do not reach the market in the crude condition, but are subjected to certain manufacturing processes at the mine or quarry, such as cutting, crushing, separating, washing, burning, calcining, or concentrating, before being regarded as marketable commodities. In such cases the general and supplemental mining schedules should cover the entire work of mining the crude material and its preparation for the market. There are some exceptions to this general rule to which special attention is called:

**Clay mining and clay products.**—The mining of clay and the manufacture of clay products are generally carried on in the same establishment; in such cases the entire operations should be reported on the general and supplemental schedules for manufactures. Only where the clay is mined and sold as such, and no manufacturing done, is a report to be made on the general and supplemental schedules for mines and quarries.

**Limestone and lime.**—The quarrying of limestone and the burning of the stone into lime are usually done by the same establishment, and the entire operations should be reported on the general and supplemental schedules for manufactures; but where limestone is also quarried and sold as such a report in detail for such stone should be made on the mines and quarries supplemental limestone schedule (Form 223), and for the lime on the manufactures lime schedule (Form 180). Where limestone is quarried solely for sale or use other than burning into lime, reports should be made only on mines and quarries general and supplemental schedules.

**Natural-gas gasoline.**—Natural-gas gasoline, or casing-head gasoline, is made at the gas or oil well and the entire operations should be reported on the General Schedule for petroleum and natural gas and the supplemental schedule for natural-gas gasoline. Gasoline made from petroleum by distillation should be reported on the general and supplemental schedules for manufactures.

**Salt mines and plants producing salt from sea, lake, or well brines.**—Salt in some localities is obtained by mining rock salt, but for the most part it is produced from brines and in any case the raw material is converted by manufacturing process, by the producer, into marketable products. All salt manufacturing operations including preliminary mining, if any, should be reported on the General Schedule for manufactures and on supplemental manufactures schedule for salt works (Form 182).

**The milling of minerals and earths.**—The following mineral and rock products are generally subjected to some process of preparation for market at the mine or quarry by the mine or quarry operators:

Abrasive materials, *Supplemental Form 201*.  
Asbestos, *Supplemental Form 204*.  
Barytes, *Supplemental Form 208*.  
Clays, including kaolin, *Supplemental Form 212*.  
Feldspar, *Supplemental Form 214*.  
Fluorspar, *Supplemental Form 215*.  
Fuller's earth, *Supplemental Form 216*.  
Graphite, *Supplemental Form 219*.  
Gypsum, *Supplemental Form 220*.  
Magnesite, *Supplemental Form 224*.  
Mica, *Supplemental Form 227*.  
Natural mineral pigments, including ocher, etc., *Supplemental Form 229*.  
Silica, including flint and quartz, *Supplemental Form 236*.  
Talc and soapstone, *Supplemental Form 239*.  
Whiting or chalk, *Supplemental Form 225 (Limestone)*.

For establishments where finishing operations—trimming, crushing, concentrating, cleaning or washing, grinding, grading, and calcining, roasting or burning—on mine or quarry products are conducted by the mine or quarry operator as a part of, or closely associated with, the mining or quarrying, a General Schedule for mines and quarries should be used and the proper "mines and quarries" supplemental, as indicated by the form numbers for the various schedules.

Establishments which do not operate mines or quarries, but manufacture prepared products from purchased crude material must be reported on the General Schedule for manufactures.

For an establishment which mines or quarries, prepares the raw material, and then uses it in further manufacture—for example, sandpaper manufacturers who use quartz or garnet produced in their own quarries to manufacture abrasive papers; paint manufacturers who mine ocher, etc., and then grind the pigment in oil in the

manufacturing of paint—a report should be made on the General Schedule for manufactures and a report, for the details of the quarrying or mining, on the proper mines and quarries supplemental. If it is possible, in case of an establishment of this kind, to separate the mining and manufacturing operations, this should be done and segregated reports secured on the General Schedules for manufactures and for mines and quarries.

#### GENERAL SCHEDULES FOR MINES AND QUARRIES AND FOR PETROLEUM AND NATURAL GAS.

**General schedule required for each mine, quarry, mineral reduction mill, well, or group of wells.**—These schedules (Forms 200 and 300) correspond to the General Schedule for manufactures, and all mines and quarries and mills engaged in dressing and reducing mineral products must be reported on the schedule for mines and quarries (Form 200) and each petroleum or natural gas well or group of wells on the schedule for petroleum and natural gas (Form 300). Special attention is called to the following inquiries, which differ in important respects from those on the schedule for manufactures.

##### INQUIRY 1.—DESCRIPTION OF ESTABLISHMENT.

**Name.**—Special inquiry and effort should be made to secure the name of mine, quarry, or mill, for although many do not have such name distinct from that of owner or operator, most of the older important mines, quarries, and mills, or groups of them have distinctive names.

**Location of mine and quarry.**—The location of mines, quarries, and wells in remote or unsettled regions and not in incorporated cities or towns should be made by reference to *nearest* city, town, railroad station, or post office. A location by township, range, section, and quarter section, if known, should be obtained and reported whenever possible on both the general and supplemental schedules.

##### INQUIRY 2.—CAPITAL ACTUALLY INVESTED AND AREA OF MINERAL AND OTHER LANDS.

**Amount of capital actually invested—owned and borrowed.**—The purpose of this inquiry is to determine the total investment by the establishment for the purposes of its productive operations, but not including the value of rented property. Therefore, both capital owned by the operator and capital borrowed by him is to be included; in other words, no deduction is to be made from the value of the assets by reason of liabilities for money due others.

**Lands.**—Include all lands as actually pertain to mining, quarrying, milling, or oil and gas producing properties covered by the schedule. This should cover not only lands held in fee, but also unpatented public land "claimed" for mineral, oil, timber, or other rights, also rented lands and rights, patented or unpatented, lands held for tunnel, drainage, power, and mill sites, and transportation privileges, pertaining to the operations covered by this schedule.

##### INQUIRY 4.—WAGE EARNERS, INCLUDING EMPLOYEES PAID BY TON, CAR, YARD, OR OTHER UNIT.

**Number of classes.**—The mines and quarries General Schedule calls for separation of the number of employees engaged in different classes of labor and also of the number employed above and below ground. This separation can usually be made from the pay roll, but if not, effort should be made to get careful estimates (from mine managers or superintendents directly, or through reporting offices). In every case of schedules covering both mining or quarrying proper, and milling or finishing operations, separation of number of employees according to these major lines must be sought.

**Labor indirectly employed.**—It is desired to account for the total number of persons employed in or about the mine, quarry, or wells, and care must be taken, therefore, to report the number employed by contractors, lessees, etc. While this number can not be obtained from the operator's pay roll, he should be able to give an estimate, and this may be accepted unless the exact number can be obtained from the contractor.

Miners compensated by share of product may not appear on the regular pay roll as wage earners. Some record, however, is undoubtedly kept of such persons, and the number should be ascertained and included with the total number reported as "employed otherwise, as by contractors, etc." This number should, of course, include the persons employed by the block lessees, leasers, etc.

Inquiry should also be made as to whether any females are employed in and about the mine or quarry, and the number must be given as called for in Inquiry 4.

##### INQUIRY 6.—SALARY AND WAGE PAYMENTS.

**Net amount required.**—In addition to the instructions given for manufactures for the answer to this inquiry in Vol. VIII, attention is called to the fact that the net amount paid in wages must be re-

ported. In many branches of the mining industry the mine worker is required to furnish his own explosives, fuel, etc. Very often the supplies are procured for him by the operator and the cost is charged to him and deducted from his wages. If the pay roll shows the gross wages, the amount charged for supplies, and the net balance paid, the net amount only should be reported. If the pay roll shows only net wages paid after subtracting the cost of supplies, report the amount so stated. If the pay roll shows only gross wages paid, a separate account of explosives and other supplies sold to miners being kept with each employee by the company's store, the amount so charged should be subtracted from the total gross wages in order to obtain the net wages.

If the charges for explosives and other supplies appear neither on the pay roll nor elsewhere as a separate account, an estimate of the amount should be obtained from the operator and deducted from gross wages.

The amount charged to miners for explosives, lamp fuel, and other supplies and deducted from gross wages in computing the net wages must be included in the amount reported for cost of materials and supplies under Inquiry 9 (first item).

**Contract miners.**—A contract miner is one who undertakes to mine coal or other mineral products at a stipulated price per ton, car, or yard, with the help of men engaged and paid by him, either by the same unit or by the day or week, out of the total amount he receives.

**Miners and others compensated by share of product.**—In the Kansas-Missouri lead and zinc mines and in the Colorado silver-lead mines, and possibly in some other cases, there are, in addition to the regular wage earners employed by the day or by the task, special classes of labor designated as "leasers," "block lessees," "tributers," etc. Technically, they "lease" from the operator a block in the mine and "pay" a stipulated royalty. In reality all the ore hoisted is usually delivered to the operator and marketed by him or shipped in his name to the sampler or smelter, and the operator retains his royalty or authorizes the ore buyer to withhold the same, and pays to the "lessees" their share of the proceeds. In all cases these workers furnish their own mine supplies. While resembling in form an ordinary mining lease, this is in substance a contract of employment on a share of the product.

This class of miners is seldom, if ever, included in the general pay roll. A separate account will, as a rule, be kept with them, from which their compensation must be ascertained. In some cases the books of a mine owner will show nothing but the royalty obtained by him as an item of income; in that case the compensation of the miners will have to be computed from the rate of royalty received by the operator. For example, if the operating company has credited its income account with \$10,000 as royalties, and the rate of royalty received by it is 20 per cent of the product, then the share received by the mine worker should be 80 per cent, i. e., \$40,000; in that case \$40,000 should be reported in answer to this inquiry as the amount paid to miners compensated by share of product.

**Amount paid for contract work.**—The work referred to here is of a more or less casual nature, for example, tunneling, shaft sinking, boring test holes, etc. It is quite distinct from mining proper done by contract miners, which is incident to the regular operation of the mine.

##### INQUIRY 8.—MISCELLANEOUS EXPENSES.

**Rent and royalties.**—Attention is called to the fact that the amount paid for rent includes the amount paid for royalties. "Rent" is a fixed amount paid monthly or annually for the use of land, plant, tunnel, and other property. "Royalty" is a stipulated share of the product of the mine usually paid for the privilege of mining, and sometimes also in lieu of rent of plant, equipment, etc.

**Development work.**—The extension and improvement of the mine usually goes on with the regular mining, and sometimes it is not easy to draw the line between development work and mining; for example, where ore is extracted from the ground incident to sinking a shaft or boring a tunnel. As a rule, however, a portion of the expenses will be charged on the books to development, the balance representing the expense of operation.

In answer to this inquiry the total amount should be reported which was charged during the year to development.

#### SUPPLEMENTAL SCHEDULES.

**Cooperation with Geological Survey and Bureau of Mines.**—To avoid duplicate inquiries, the Geological Survey and the Bureau of Mines, which collect annual statistics relating to the mineral industries, and the Bureau of the Census, have made arrangements for the joint use of the data collected on the general and the supplemental schedules. The specific information for the Geological Survey and the Bureau of Mines is carried on the supplemental schedule, and therefore a supplemental schedule or schedules must accompany every General Schedule.

**Application of supplemental schedules.**—As is the case with manufactures, it will be necessary in some cases to prepare more than

one supplemental schedule for the mines and quarries reported on a single General Schedule. Some of the supplemental schedules enumerate all the mineral products produced in connection with the principal product, with instructions to report the details of the minor products or by-products on the same or other supplemental schedules. All of the minor products or by-products could not be provided for, and the agent must see that the statistics of production correspond to the data on the General Schedule.

In the case of those supplemental schedules which call for agreement of total value of products with total value of products in Inquiry 10 of the General Schedule, there must be exact agreement of the total values and either proper correspondence of the items entering in the totals or adequate explanation when elements of the totals are differently itemized on the two schedules. Total value of products is not required by many of the mines and quarries supplemental schedules, the schedules in those cases stating that "the total value of products is to appear on the General Schedule for mines and quarries." These supplemental schedules provide primarily for a report on quantity produced, and, in most cases, also quantity and value of sales in 1919. Total sales may, by reason of accumulation of stocks or withdrawal from stocks during the year, differ more or less from the actual production of the year. The data required on the supplemental will, however, generally make it possible to reconcile the "value of ore, mineral, or stone" on the General Schedule with the total quantity produced as reported on the supplemental schedule, and the agent must see that there is a satisfactory agreement.

**List of supplemental schedules.**—In addition to the general schedule for mines and quarries and the special general schedule for petroleum and natural gas wells, the following supplemental schedules have been prepared for mines, quarries, and petroleum and natural-gas wells:

## MINES AND QUARRIES.

Form number.	Form number.
201. Abrasive materials (see paragraph below for products).	221. Iron ore.
202. Anthracite (Pennsylvania).	222. Lead and zinc mines.
203. Antimony ores.	223. Limestone and dolomite.
204. Asbestos.	224. Magnesite.
205. Asphalt and allied substances.	225. Manganese and manganiferous ores.
206. Barytes (crude).	226. Marble.
207. Basalt (trap rock).	227. Mica.
208. Bauxite.	228. Millstones and chasers.
209. Bituminous coal.	229. Natural mineral pigments.
210. Bituminous coal (local commercial).	230. Placer and surface mines (gold, silver, and platinum).
211. Chromite (chrome ore).	231. Phosphate rock.
212. Clay (mines).	232. Pyrite.
213. Copper mines (Lake).	233. Quicksilver.
214. Feldspar.	234. Rare metals (cobalt, molybdenum, nickel, tantalum, titanium, tungsten, uranium, and vanadium).
215. Fluorspar.	235. Sandstone.
216. Fuller's earth.	236. Silica (quartz).
217. Gold, silver, copper, lead, and zinc, deep mines.	237. Slate.
218. Granite.	238. Sulphur.
219. Graphite.	239. Talc and soapstone.
220. Gypsum and gypsum products.	240. Tin ores.

## PETROLEUM AND NATURAL GAS.

Form number.	Form number.
301. Petroleum.	303. Natural gas (B).
302. Natural gas (A).	304. Natural-gas gasoline.

The inquiries on the supplemental schedules are direct, and as a rule require no explanation, but special attention is called to the following:

**Abrasive materials (Form 201).**—This schedule is to be used for reporting emery, corundum, garnet, tripoli, rottenstone, diatomaceous earth (otherwise known as tripoli, tripolite, infusorial earth, Kieselguhr, of fossil flour), pebbles used in tube mills for grinding, tube-mill lining, and pumice. *A separate supplemental report must be made for each kind of product.* In Alexander and Union Counties, Ill., some producers of material classed as tripoli by the Geological Survey insist that their product is silica. Report may be taken on the silica schedule (Form 236), but for sake of uniformity and comparability of records use of the abrasive schedule is preferred.

**Anthracite coal.**—The supplemental schedule (Form 202) on anthracite is to be used *only for Pennsylvania anthracite operations.*

Coal in other regions, notably northwestern Arkansas and some locations in Colorado, commonly designated anthracite, is for statistical purposes classed as bituminous by the Census Bureau and the Geological Survey. The unit of enumeration is the breaker or washery. Nevertheless, a full list of mines supplying coal to each breaker *must* be obtained. Inquiry 2 of the supplemental requires full days in operation, parts of days to be reduced to equivalent full days, and does not call for the same reply as Inquiry 7 of the General Schedule, which requires number of all days in which there was any productive activity or development work. Inquiry 3 of the supplemental is for determining from the whole number of employees on the pay rolls for the year, whole and part time, an equivalent number of full-time employees. The mine operators should be asked to determine this figure by the same method used in reply to the Geological Survey's regular annual canvass.

**Bituminous coal.**—Two forms of schedule have been provided. The longer (Form 209) is to be used, so far as possible, for reporting all bituminous-coal mining operations. But smaller operations, for which detailed information required by Form 209 can not be obtained, may be reported on Form 210, which is designed for use of small mines not using mining machines and normally producing less than 3,000 tons, chiefly for local commercial use. Small coal banks not employing regular mine labor and producing less than 1,000 tons annually are excluded from the census canvass. Coal mines of larger producing capacity which produced less than 1,000 tons, because recently opened, or developing, or because of adverse conditions during 1919, or other reasons, must be reported.

Concerning inquiries on time in operation and number of employees, see preceding paragraph on anthracite coal.

Lignite is for purposes of the census to be reported as bituminous coal.

**Fluorspar.**—At a few mines in Kentucky and Illinois where fluorspar is crushed and cleaned by concentration, silver-bearing lead concentrates are recovered. The quantity of these concentrates should be entered in reply to Inquiry 1, fluorspar supplemental schedule (Form 215), in the form of an additional item (d), and the net value of these concentrates should be included with the value of products reported on the General Schedule. Furthermore a report on the silver-bearing lead concentrates should be secured on Form 222.

**Manganese and manganiferous ores.**—This schedule (Form 225) applies only to mines which produce ore used for its manganese content. If the ore contained silver in paying quantities, it is to be regarded as a silver ore and should be so reported on Form 217.

**Placer and surface mines.**—The gold product of placer mines is not fine gold. The ounces are crude ounces. But the fineness of the gold fluctuates within narrow limits and the miner, as a rule, knows the average fineness of the gold from his mine. The mint value of an ounce of fine gold is \$20.67; the value of a crude ounce varies with the fineness of the gold.

In dredging for gold a record is kept, as a rule, of the quantity of material or volume of the ground handled. The quantity being determined by the capacity of the dredge, it can easily be calculated, even where no record is kept.

Under other methods of working a commercial company will keep a record of the quantity of material handled or of the average recovery of the gold per cubic yard. The average recovery can be used as a basis for estimating the quantity of material handled.

**Gold, silver, copper, lead, and zinc, deep mines (Form 217).**—This schedule applies to all mines producing gold, silver, copper, lead, and zinc ores, and manganiferous ore carrying precious metals, except the Lake Superior copper mines and the non-argentiferous lead and zinc mines of the Central and Eastern states. Manganese ores and manganiferous iron ores used only for their manganese and iron content are to be reported on the supplemental schedule entitled "Manganese and manganiferous ores" (Form 225). Separate schedules are provided for the Lake Superior copper mines (Form 213) and for the lead and zinc mines (Form 222) whose product carries no precious metals in paying quantities. The items of prime importance on the schedule for deep mines (Form 217) are replies to Inquiries 1, 2, 10, and 11, which most accurately give the quantities of ore sold or treated, the quantities of each kind of concentrates sold or treated, and the assay of each class of ore and concentrates.

The deep-mines schedule (Form 217) does not require a report on the total value of the mine product as such. Inquiry 2 calls for the gross value of metals contained in the ore produced and treated, which is determined in accordance with well-established trade custom by sampling and assaying the ore, and the gross value per ton is determined for each of the metals present in accordance with the assay content. The sum of these is the gross value required on the supplemental schedule. The net amount received by the mine operator for the product disposed of is the value of ore product required in Inquiry 10 of the General Schedule, and represents



the net value of the ore at the mine. This is arrived at by deducting from the gross value of the metal content certain losses in treatment and costs and charges for converting the ores, through milling and smelting operations, into marketable products. These deductions include the following:

*a. Haulage and freight.*—Very frequently the ore has to be hauled from the mine to a railway station or a mill. The cost of haulage when borne by the mine operator should be deducted from the gross value of the ore. Freight to mills and smelters is generally paid by the works or the buyers, and is deducted from the gross value of the shipments. The cost of freight and haulage per ton usually remains uniform for each mine and can be accurately stated.

*b. Penalties.*—Sometimes zinc or other metals in the ore are not paid for by the mills and smelters, and also the ores are sometimes penalized for certain impurities in them. Metals not paid for and penalties must be deducted from the gross value.

*c. Treatment charges.*—Some ores are shipped direct to the smelters but more commonly they are "milled" either for extraction of mill bullion—if free milling—or for concentration to reduce bulk in further freighting to, and handling in, smelters, or they may be milled for both bullion and the making of concentrates. The gross value of bullion and of concentrates is determined by assay, the same as for ores. Mill bullion may be returned to the mine operator and by himself sold to the mint or banks, or it is sold for him by the mill. In either case he is charged with mill treatment costs, which must be separately accounted for and deducted from the gross value of the bullion for arriving at the net value to be reported on the General Schedule in answer to Inquiry 10. In the latter case selling expenses and commissions should also be deducted. There are also similar treatment and selling costs for concentrating which should be similarly accounted for and deducted from the gross value of concentrated product sold or shipped to smelters.

**Lead and zinc mines (Form 222).**—This supplemental schedule is to be used for lead and zinc mines in the Central states—Illinois, Kentucky, Wisconsin, Missouri, Oklahoma, Kansas, and Arkansas—and also the nonargentiferous mines of the Eastern states—New Jersey, New York, Tennessee, and Virginia—but not for the few copper producing mines in Missouri and the lead and zinc mines in New Hampshire, Vermont, and North Carolina, which are to be reported on the other metal mines schedule (Form 217).

As a rule, the mine is combined with a concentrating mill of some sort; the schedule accordingly combines inquiries in relation to both mine and mill. The smaller mines, which have no facilities for milling their ore, have the same treated on toll, or by outright sale to, a custom mill in the neighborhood; Inquiry 1, (c), (d), and (e), is intended to cover such cases. On the other hand, a mill connected with a mine sometimes treats ore from another mine for a stipulated compensation per ton; such cases are covered by Inquiry 2.

Custom mills in the Central states which do not belong to any mine, but operate exclusively on custom or purchased ore, should be reported on the supplemental schedule for lead and zinc mines (Form 222) by answering Inquiries 2, 3, and 5 (g), and the report should show that the ores handled were purchased or treated on toll. There should be appended a list showing for each mine or mine operator from whom ore was obtained the quantity (tons, 2,000 pounds) of ore, the quantity of concentrates recovered and sold, and the average assay of concentrates.

In the lead and zinc mining region of the Central states the system of tenure of mineral land results in the splitting up of the mining operations among several parties; the mineral land may be owned by one company, the mine developed by another, the mill owned and operated by a third, and the ore mined by a fourth. Usually the product is sold by one party, which retains its share of the proceeds and pays over the balance to the others. In all these cases a full report must be obtained, if possible, from each operating party, but care must be taken that each reports as his own product only the actual quantity of ore mined or treated by him; or if not possible, as complete a report as can be made must be obtained from the landowner or lessee to whom royalties are paid.

**Reduction mills.**—A special schedule has not been provided for ore-reduction mills operated as custom mills (in some places called sampling works). The operations of such mills in connection with metal mines will be included in the report on the schedule for "Gold, silver, copper, lead, and zinc, deep mines" (Form 217), and in the report on the schedule for "Lead and zinc mines" (Form 222). In the case of a custom reduction mill operated independently of a mine, a report should be made on the General Schedule for mines and quarries and on the metal mining schedule appropriate to the region, with a statement that all the ores handled are purchased or treated on toll, and there should be appended a list of principal shippers to the mill and the quantities of ore from each.

For methods of valuation of ore and concentrates, see paragraph relating to gold, silver, copper, lead, and zinc, deep mines.

**Lake copper mines.**—In the Lake Superior region the crude product of the copper mines is locally called "rock." As a rule, every copper mine in the Lake Superior region is equipped with a mill for dressing the rock; i. e., for removing the worthless material attached to the copper. The product of rock dressing is locally called "mineral." The latter is then treated at a smelter where marketable "lake copper" is produced. If the copper contains silver in paying quantities, it is sent to an electrolytic refinery, where the silver is separated from the copper; the latter is then called "electrolytic copper." The larger mines are equipped with smelters or refineries where their product is treated. The smaller operators either sell their mineral to smelters or have it treated for their account at a custom smelter or refinery. If the mineral is sold, its value is determined in the same manner as that of gold, silver, copper, lead, and zinc ores in other regions; if it is treated at a custom smelter or refinery and the metallic product is marketed by the operator, the latter is credited with the full (gross) value of the metals produced, but the cost of treatment at custom smelters and refineries (haulage, freight, charges for treatment, including selling expenses and commissions) should be accounted for separately, and not included in the net value or amount received for mineral products. The schedule (Form 213) has been designed to cover all the operations of the Lake copper companies' mines and reduction plants, because, as a rule, these operations are conducted as a unit and the product is metallic copper.

**Lead smelters, copper smelters, tin smelters, zinc smelters, and antimony smelters.**—A report for every smelter must be made on the General Schedule for manufactures and on a manufactures supplemental schedule for smelters.

Where a smelter is operated in combination with a mine, separate reports are required for the mine and the smelter. If the mine and the smelter are operated jointly and only one set of books is kept covering both, a combined report may be made on the General Schedule for mines and quarries, but separate reports must be made on the supplemental schedules for the mine and the smelter.

**Refineries (copper and lead).**—A report for every refinery must be made on the General Schedule for manufactures and on a supplemental schedule for copper or lead refineries, as the case may be. Whenever a refinery is combined with a smelter, separate reports must be secured for the refinery and the smelter. In case only one set of books is kept covering both the smelter and the refinery, a combined report may be made on the General Schedule for manufactures but separate supplemental schedules must be prepared for each. Special instructions concerning copper refining are given in the paragraph relating to Lake copper mines.

**The stone industries—Basalt (trap rock) (Form 207); Granite (Form 218); Limestone and dolomite (Form 223); Marble (Form 226); Sandstone (Form 235); and Slate (Form 237).**—Supplemental mines and quarries schedules have been prepared for the quarrying of each of these products. They are designed to cover the quarrying operations and those manufacturing operations, such as crushing and dressing (with only one exception, see paragraph on mining and manufacturing, limestone and lime, page 439), which are intimately related with and generally conducted in connection with quarrying. When an establishment is engaged in manufacturing stone products, at the quarry, in connection with the quarrying of the stone, and only one set of books is kept for the two operations, a report must be secured on the General Schedule for mines and quarries and also on the proper supplemental. Such manufacturing at the quarry includes the preparation of stone for paving materials, for monumental and construction purposes, and for a number of minor uses. Of these minor uses, the making of millstones, for example, must be reported on the millstone supplemental (Form 228). If the product of the quarry is all sold as millstones, no other supplemental is required. The making of grindstones, etc., at the quarry, must be reported on the manufactures supplemental for grindstones, oilstones, whetstones, etc. (Form 177). Attention is called to the fact that usually the making of grindstones is a manufacturing industry and should be reported on the manufactures General Schedule; when, however, the manufacturing operations at the quarry do not to any great extent exceed hand finishing, or require an elaborate plant, a mines and quarries General Schedule should be used.

There are numerous establishments which manufacture stone products from purchased rough stone and are entirely independent of the quarries; these establishments must be reported on the manufactures General Schedule, not on the mines and quarries General Schedule, and no reports on the mines and quarries supplemental schedules are to be obtained for them.

**Petroleum and natural gas.**—The special General Schedule for petroleum and natural gas corresponds with the General Schedule for mines and quarries. The inquiries, however, have been framed to meet the conditions peculiar to the petroleum and natural-gas industries, but they agree so closely with those in the General

Schedule for mines and quarries that no special instructions are necessary. In every instance this schedule must be accompanied by the supplemental schedule for petroleum or natural gas and for natural-gas gasoline when produced. When both products are obtained from the same well or group of wells covered by the special General Schedule, reports must be made on the respective supplemental schedules.

Two forms—supplemental schedules A and B—have been provided for reporting production of natural gas. Schedule A (Form 302) requires the greater detail as to distribution and measured output in thousands of cubic feet. Wherever possible, this form should be used and the other (Form 303) used only for reporting companies whose output is not metered and which is used largely for local domestic consumption. Form 302 separates domestic and indus-

trial consumption. The distinction will, in general, be readily made, particularly if it be noted that although domestic consumption comprises chiefly household use there may also be included consumption in either ovens and furnaces or in gas engines by small industrial establishments, such as bakeries, laundries, small machine and repair shops, and the like. Industrial consumption for fuel implies, in the main, large consumption in kilns, furnaces, and engines by establishments receiving special gas service.

Printed reports of mining, quarrying, and oil and gas producing companies.—In cases where an annual report of the company is printed, a copy of the latest report should be secured and forwarded with the schedules. Copies should also be obtained of any other printed matter that will add to the information contained in the schedules.

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